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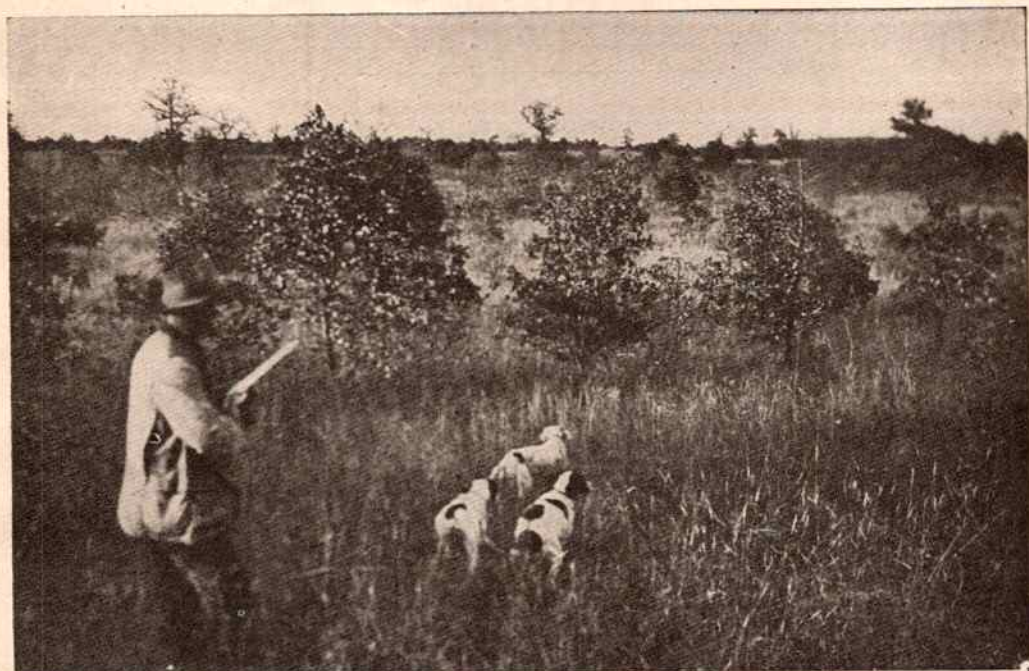
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CLASSIFIED ADVERTISEMENTS—Continued

ANIMALS AND BIRDS—Continued

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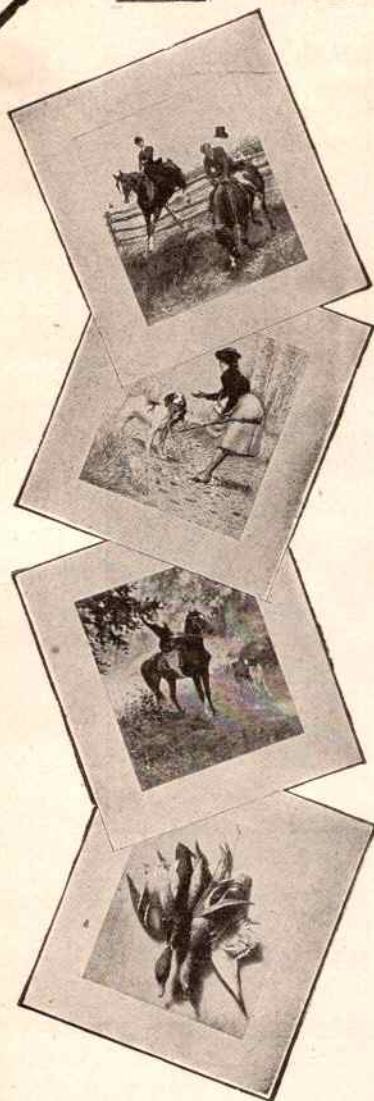
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A February Calm

By ROBT. PAGE LINCOLN

Soft winds lift up the curtains of the day
Roaming the landscape of the winter moon
Leaping the snowy barrens till they swoon
Down in the frosty lowlands where a gray
And heavy mist still folds the creeping way.
As the short hours linger dead gusts croon;
The sun-bathed hills all breathe in tune
And snow birds twitter forth a drowsy lay.
Still higher mounts the sun his mellow sphere;
The noontide glories in a wanton dream;
The day drifts by and from the western bar
A haze is drawn. All voices breathing seem
Smothered or dying. Now near and from afar
The wintry gale breaks cold and drear.





THE NEW WAY OF SECURING TURPENTINE IN THE SOUTH WITHOUT INJURING THE PINE, BY MEANS OF A CUP—THE IDEA OF THE FOREST SERVICE

Illustrating "The Forest's Greatest Friend"

THE OUTER'S BOOK

A MAGAZINE OF OUTDOOR INTEREST

VOLUME XXI

FEBRUARY, 1911

NUMBER TWO

The Forest's Greatest Friend

By DAY ALLEN WILLEY

WITH ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR



THE Capital City of the Nation has been the scene of many gatherings where the people swung their hats and cheered as they welcomed the newly elected senator or bid godspeed to the departing president.

This is one of the features of Washington life. A little over a year ago a farewell was given but those present were not there for formality. Every man and every woman of the hundreds bending over desk and table in the dingy old building on F street was not only an earnest worker for the "Chief" but also his friend. As he stood in his office giving a warm hand clasp to the clerks, secretaries, stenographers and office boys, as they filed past him, his face wore a broad smile in contrast to the sorrowful look of the group who had come from their work centers to say goodbye, many of the women with tears in their eyes. Finally the hand shaking was over. Still smiling the man waved his hand for silence. "Friends," said he, "I feel as if I was taking leave of my family. I know every one of you, as I have seen you devoted to your duty day by day, I knew that it was not merely for the weekly pay envelope, but because you were willing to serve your country. We have all worked together. What I may have done to save our forests, you believed was done, because neces-

sary to the Nation's prosperity, and I want you to keep up your interest even if I may not be with you. Remember, you are acting for the country—not for the party or individual." The faces brightened. The noise of the cheering echoing down the streets drew thousands to the Department of Forestry. They knew the reason for the cheers and joined in one of the greatest ovations ever given a public man at the Capital. Gifford Pinchot may no longer be called Chief Forester, but the people have given him a greater title, "Guardian of the Forests." No American could have a more honorable name when we think of the enormous wealth of our woodland that must be preserved for the use and profit of the United States. No one has made such a careful study of this vital national problem as Pinchot. The tree is his best friend. He has thought of it since boyhood and conservation is his life monument. Whether in or out of official position he will always be a protector of our forests, and what that means the West knows far better than any other section of our country. Here are the reasons in his own words why this lover of the wilderness studied forestry in his youth and made it the aim of his talent and ambition:

"The science of forestry includes the study of everything which has to do with the growth and utilization of forests. Since nature produces forests, on one side forestry is a branch of natural science. The forester must study the



A PLANTING GANG ON A SITE AMONG THE CHAPARRAL CORN

laws of nature which govern the growth of trees, singly and in the mass. He must understand the life activities of the tree—how it produces and sows its seeds, what it needs in order to thrive, and how it feeds itself and builds up its structure. All of this may be called tree botany. He must also know the laws which govern the life of the forest itself—a society of trees, the science of the forest as a product of nature.”

“But the science of forestry has to do also with the use of forests. It is a very practical science, like the science of agriculture. Forest mensuration, for example, is an important branch of forestry. If a man thinks of buying or selling a piece of woodland he naturally wants to know how much wood is on it—how many board feet of lumber, how many telegraph poles or fence posts, how much cordwood, the standing trees will make. Again, if a man thinks of investing in a young forest, he wants to know how long it will take the trees to grow up and how big a harvest he can count on them when they are grown. And when the harvest is ready a host of questions arise. Where is the next generation of trees to come from? Which trees will it pay to cut now? How is the timber to be got out of the woods most cheaply and with least harm to the future forest? What steps

should be taken to prevent loss by fire, that great curse which so commonly follows lumbering, and which has turned millions upon millions of acres of good timber land into barren wastes? The whole subject of lumbering forms one of the largest divisions of the field of forestry.

“A few years ago in this country forestry was commonly thought to be merely a branch of landscape gardening. This is a profound mistake. Forestry creates beauty, but not as its chief aim. The field of forestry is economic. Forests are one of our great sources of national wealth. The forests of the United States each year produce more than one billion dollars’ worth of wood products—as much as, if not more than, the yield of all the mines in the country—gold, silver, copper, iron, coal, and all the rest. The trouble is that we are gathering this enormous and most valuable product three times faster than the forests are growing, and very largely by methods which destroy the forests themselves. This process spells not prosperity but impoverishment, and in the not distant future. Like an unweeded garden, our timberlands are suffering from neglect. Instead of being fully stocked with the best kind of trees, they have been left devastated after lumbering, in many regions. On much of the sandy pine land of the Lake States, they are growing useless



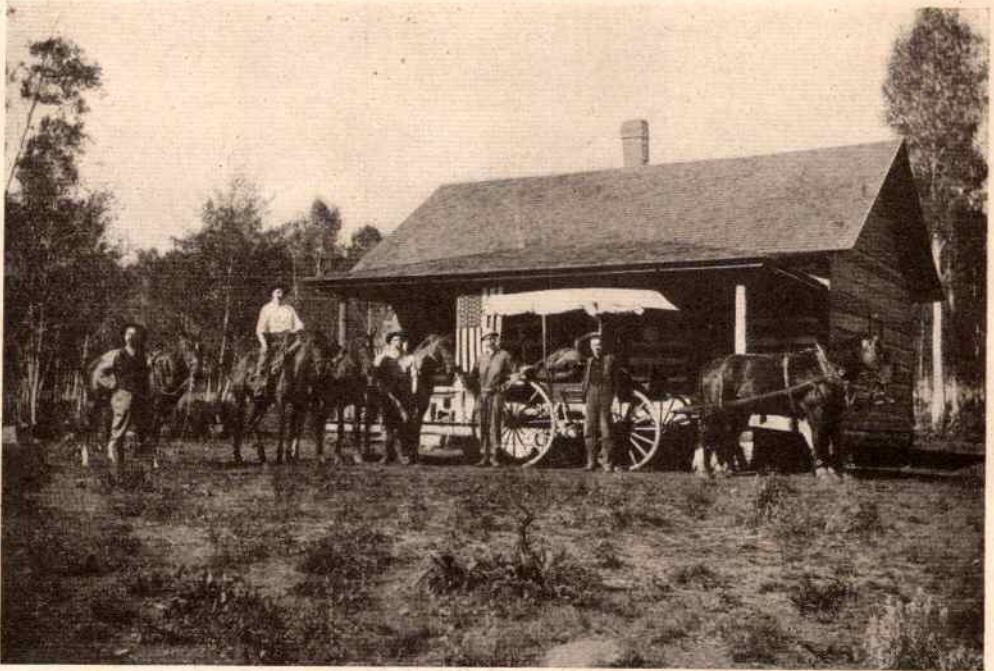
ONE OF PINCHOT'S STOPPING PLACES IN THE WEST

brush; in others little but firewood. The forester must take hold of these lands, weed the garden, and start a better crop. Forests are often needed quite as much to produce water as to produce wood. A wellwooded land is also a wellwatered land. When the forests are destroyed, springs dry up, streams run irregularly, and the rainfall rushes swiftly away in destructive floods. The soil washes from the hill slopes, where it is useful, and fills up the river beds and harbors, where it is harmful. A region stripped of its timber becomes a less healthful, less agreeable and less profitable place to live in. We are beginning to see that water is one of the great natural blessings which we must conserve by care and forethought. If we do not it will vanish or turn into a curse. The health of our Eastern cities and towns depends on pure water; the prosperity of our manufacturers, the development of our commerce and the increase of our Western farms are all closely connected with water conservation. The most powerful tool for controlling our water supply is the forest."

Europe sets the world an example of the care and preservation of the tree and into its forests went Pinchot to follow the trail of Sir Dietrich Brandis—the world famed tree protector. Only by accident did he chance to meet

Sir Dietrich. Here is his story of it: "I ran across a gentleman who got me a letter to Sir Dietrich Brandis, of whom I then heard for the first time. I went to Bonn, Germany, found him one afternoon, told him I wanted to study forestry, and asked for his advice. Instantly he adopted me, so to speak, accepted the care of directing my work, and began to tell me what I ought to do. I remember his deciding that I should go to the Nancy Forest School, which was my plan already, and when I said that I was ready to go, he immediately began to look up trains. I saw that one started at six o'clock the next morning, and as I wanted to make a good impression, I said I don't mind getting up early, so as to take that one. He said, 'Of course you will take the first train.' I have never forgotten the impression he gave me then of his absolute willingness to do whatever was required for his work, from his point of view, and his expectation of finding the same thing in other men."

The meeting of those two men in the venerable university town marked a turning-point in the life of Gifford Pinchot. To no one could he have gone to find a better preceptor, a truer guide along the course which was to be the way of his life and field of his work. One of the



A PARTY OF RANGERS STARTING FOR A DAY'S WORK

world's great teachers in the beauty, the value of the woodland was this sturdy, rugged Teuton—the sort of human stock that the young man of abition and determination to be something, to be out of the commonplace, looks to for advice and encouragement. Perhaps intuition, perhaps some other subtle means of intelligence, told each that the other was “worth while,” and the friendship begun at Bonn continued until the time came for the world to part from Sir Dietrich Brandis and he passed from it, leaving a perpetual monument in his system of caring for groves and forests, a system followed in the world over and in operation today in the United States.

But his interest in the would be forester is referred to by Mr. Pinchot in a way which shows how the veteran savant of the woods was esteemed as well as respected by those who looked up to him. “Taking charge of a student meant with him not merely to advise as to the general course of study, but also to require bi-weekly reports, and to read and to criticise them to send long letters written in long hand to each of us from time to time, and in every detail to try with a never-ending patience, enthusiasm and generosity to see that each got from his work exactly what he came for. This was done for me, then for my friend Graves, then for Price, Olmstead, Sherrard and many others. In this way Sir Dietrich has a guiding

hand in shaping the men whose turn it became afterwards to shape the general policy of forestry in the United States. So important did his connection with forestry in this country become that his correspondence with all of us must have taken a considerable portion of his time. We who were his students were all until the end more or less in touch with him, and we were constantly referring in our own minds the problems which we had to meet to our conception of what Sir Dietrich would think about them, so that his influence on the expansion of forestry in this country was a real and a very important one.”

His enemies among the politicians have called Pinchot an “aristocrat.” That’s nothing against him. The average American takes pride in his ancestors and there is no reason why he should not when he has the right sort—but Pinchot is not a boaster. He sinks personality in the enthusiasm for his life work. When at home he plays the host with the ease and hospitality of a gentleman. The Washington home was designed as a center for welcoming friends. One of the noted residences of the city beautifully furnished and in the most exclusive part of the Capital, the family in the big mansion are only two besides the servants—mother and son. The world knows little about Mrs. Pinchot, but her circle of friends know the silver haired woman as one of the stately dames of the Capital.



A SEQUOIA, LARGE ENOUGH TO BUILD A COMPLETE HOUSE, LEFT TO ROT IN CALIFORNIA

Tall, of graceful carriage, dressed with the exquisite taste that is instinctive to a woman of refinement, Mrs. Pinchot, despite her years, is in possession of all her faculties and is as active and as energetic as a woman of half her years. She is a home woman and the attractive interior of the house is due to her thought and care, but she is also noted for her social functions when gather the diplomat, the admiral, the general, senator, and the cabinet to enjoy her hospitality. In the Roosevelt days, Mrs. Pinchot was a frequent visitor to the White House. It is a home in truth. Where mother and son lead a life which is too sacred to outline on paper. Possibly the reason why Gifford Pinchot is a bachelor is because he does not need a wife, having such a mother. Such is a glimpse of Pinchot as he is in civilization, but no one loves the outdoors more than the man who is the best friend of the forest. He is a child of Nature today, just as much as when a boy in knee pants.

As a child, it is said, Gifford Pinchot would toddle towards the nearest tree or bush, when allowed to play out of doors. And the love of nature that found such early expression, was in his blood, for his father, the late James W. Pinchot, was himself a lover of nature, and especially of the woods, and not only united with the son in founding the Forestry School at Yale, but gave still better proof of his enthusiasm by establishing a forestry experiment station on his beautiful estate overlooking the Delaware River at Milford, Pike County, Pennsylvania.

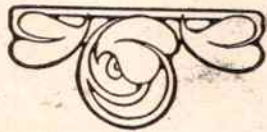
Even in this old East are big Woodlands and the older Pinchot with the fondness of the forest inherited from his European ancestors, obtained a large tract containing some of the finest specimens of trees that grow in this country. To these, however, were added rare varieties obtained from abroad and no private forest in the world affords such an object lesson in tree conservation as that of Grey Towers. The name is taken from the fine old mansion which was the summer home of his father. Built of stone it is massive in appearance and somewhat re-

sembles the old time English country seat seen so often in the shires of England.

Grey Towers is another illustration of the generosity and love of the forest that are traits of the Pinchot family. The most noted forest school of the New World was established on a site donated to Yale College and gratefully accepted by its faculty. Here are erected buildings for the training of would be foresters by a corps of skilled instructors while the students have an opportunity to get close to Nature in the Grey Towers wood which is open to them as an object lesson.

When George Vanderbilt looked over the jagged peaks of the Carolina hill country and selected one for his home site, he failed to satisfy his craving for the wild, but bought more and more, and finally reached out to old Mount Pisgah. Here was an opportunity to test the skill of the disciple of Brandis, for Biltmore includes over a hundred thousand acres covered with trees. In this wilderness Pinchot made his home with a little band of boys inspired by his example. To them he gave of the knowledge he had acquired; and so it was that in this out-of-the way corner of the South was formed the first of our forest schools twenty years ago, and before the nation realized the need of such a bureau in its administration. Those who have seen Biltmore with its artistic chateau and its mediaeval surroundings, and then have visited the model farm villages created for the home life—not the mere existence of the mountain folk, know that Mr. Vanderbilt has indeed performed a great work for humanity, spending his fortune wisely and well. And none of his ideas has been more important than that of forest conservation, which he intrusted to Pinchot, his friend. That tree garden in Carolina has played its part in awakening the people to the significance of forestry; though they were already more or less acquainted with the activity of European governments along similar lines. And it was high time, indeed, to be up and doing, if our forests were to be maintained.

[TO BE CONCLUDED]



Short Tales of the Woods and Waters

Trout Fishing with Variations

By M. B.

TO make a boat trip down a trout stream and live upon the country in the sense of getting meals and lodging at farm houses near the stream, was a proposition somewhat new to me. Yet under the glowing recommendation of Mr. E. of Owosso, I was persuaded into a trip of that kind, down the south branch of the Manistee river in Lake County, Michigan, the branch being locally known as Pine River. Mr. E. said he had made similar trips on both the north and south branches of the Ausable and they were delightful and as the south branch of the Manistee was known to be an excellent trout stream the proposition looked good to me. So, on June 20th, taking with us a collapsible canvas boat and all the necessary fishing tackle, with a box of cigars by way of luxury, as neither of us use anything but the good clear water of the stream for drinking purposes, we took train to Cadillac, staying over night at that city, and the next morning by train to Tustin which we reached at eight o'clock. There we arranged for a team to take us some eight or ten miles down stream so as to reach it below all flood wood jams, tree tops and other obstructions, with which the stream is filled in many places. All of the trout fishermen and other informed persons about town told us that if we placed our boat in at Riverbank we would be below the obstructions and have an open stream, so there we started a little after noon. Matters went very nicely for an hour or two. Rainbow trout were quite plentiful although not large and we caught some very nice brook trout, but then the trouble began, for, as we rounded a bend, we found the stream filled with tree tops, and a carry of nearly half a mile became necessary. The boat was not heavy, but the refrigerator baskets filled with ice were, and three trips had to be made. If there is anything more conducive to a free flow of perspiration than toting a boat on a hot afternoon with your waders on, and mosquitoes a plenty, I have not as yet found it out. Two more small carries were made during the afternoon and at about dusk we reached what is locally known as the Red bridge. I then suggested to Mr. E. that inasmuch as this was a trip of his planning, it was about time for him to look about for sleeping quarters, and also to find our supper. He said it was a serious

matter and he preferred to clean the fish that we had on hand. His experience on the Ausable didn't seem to hit in with this stream; anyhow he thought I could do better than he and so I made the try. A young man we met on the stream informed us that we might obtain accommodations with a Mr. S. near by, who sometimes kept fishermen, and so I made for his place. I found him at the barn milking. He said the young man who had informed us that he kept fishermen was the biggest liar in that part of Michigan. His wife was alone and sick, and they could not possibly care for us, but a Mr. W., living on the other side of the stream could. So back I went, reporting progress to Mr. E. as I passed by, and found the house of Mr. W., a poor shack with more men sitting outside than could possibly get in, and of course no place for us. Mr. W. said that if there were any greater liars than Mr. S. he had not heard of them, but that if I would go back to the second house beyond that of Mr. S., I would find a good place to stop and so I found it. It was the home of L. A. Nelson, a fine farm home and very nice people. We were really in luck to be cared for by Mr. and Mrs. Nelson and we spent a very pleasant evening with them. It is a fine place for fishermen to stop and there is good fishing there too.

We made an early start the next morning expecting to reach Skokum and our dinner by noon. Skokum is a nice little place of seven or eight cottages owned by some gentlemanly fishermen from Ohio, who, with their families, spent a large portion of the trout fishing season there. With an open stream we could easily have reached this place, as planned, but we found the stream closed in many places, and noon found us hardly half way. We kept going, hoping always that the next bend would show the river entirely clear, but evening came and we were still several miles from our dinner, with supper due and in strong demand. We might have made a lunch on the fish we had caught and we had plenty, but all the matches we had were in my vest pocket and so inside of my waders and perspiration had rendered them worthless. A boy that we had met up stream a ways told us that a mile or two lower down we would find a bridge near which lived a settler and the only place within four or five miles. It was growing dark when we reached the bridge so we pulled the boat out, hid it in the brush and scattered the rest of our traps around in

different hiding places, took our grips and struck out for the house. It was a dilapidated looking place enough and the man of the house said he thought we could stay but could tell for sure when his wife got back. She arrived at about nine o'clock and you ought to have seen her—raw boned and rough, about six feet tall, with a coarse heavy male voice. As the old man heard her coming he hurried out to the kitchen and we heard him mention gently that there were a couple of fishermen there who wanted to stay all night.

"Not by a — — sight," she shouted in that coarse heavy voice of hers and strode through the room without even looking at us.

I took a side glance at my friend E. and his look showed that with him all hope was gone.

When the old lady came around again I gently mentioned to her that if it was not convenient for her to care for us in the house we would be satisfied with a blanket and would sleep in the barn on the hay.

"Hay, hell! there ain't any hay," she stopped long enough to say.

Mr. E. and I were seated in the house and we concluded to set it out a while longer at least, and we were thinking seriously on how to get something to eat. After a while the old lady came in again and lit a lamp. I was casting about in my mind as to what eatables were most likely to be at hand, and as I am very fond of bread and milk I suggested to her that a bowl of bread and milk would be very nice as we had had nothing to eat since morning.

"Milk?" said she, "why the cow won't be in in a month, and there ain't any bread in the house, nor any meat, nor butter, nor even flour, and my old man will have to go the next morning over to Riverbank and get things."

About this time, Mr. E. pretending thirst, went into the kitchen for a drink of water, and coming back whispered to me that he had peaked through the pantry and there was not a thing in it. Well, there we were! Nothing to eat was certain, but a chance to sleep I meant to try out further. Finally, about ten o'clock, the old lady turning to her husband shouted out, "Well, now you have got these fishermen here what in hell are you going to do with them, we can't all sleep in one room."

The old man said he would take down a bed and bring it in. We suggested that he lay the springs in a corner of the room where we were, a mattress on that with some blankets and we would be all right, which was done. We were up early in the morning, did not see the old lady, gave the old man a dollar and were off. It must be rather close living for those people as there was certainly nothing in sight to eat except potatoes and a few chickens around the barn. We reached Skokum at about eleven o'clock and went to the home of Mr. Peters

where I had stopped the fall before, while partridge shooting, and how we did eat. I never knew that bread and milk tasted so good. A full pitcher was brought from the cellar, nice and cold, and by the time we had finished that, dinner was ready. We remained with Mr. Peters a couple of days, caught our quota of trout, one hundred each,—no large ones, mostly rainbows, eight to nine inches,—some brook trout, a couple of dozen that would run up to eleven or twelve inches in length. The scarcity of large rainbow trout was a surprise to us. They simply were not here. While we did no bait fishing, still if there were any large ones we should have seen some of them. There are no better trout fishermen than Mr. E. and when it comes to catching large trout he lands more than any man I know, so when he says there are none in the stream it may be considered settled. The natives state that the large ones come up early in the season and after spawning return at once to deep water, going back to the lake. They claim to have caught them in the spring as large as fifteen or sixteen pounds in weight.

North Woods Guiding

By B. A. GUNSETH

I HAVE a holiday as it is Christmas day and Uncle Sam says I can rest thirty minutes after the last mail train, and do as I please and go wherever I please, just as long as I don't get onto somebody's corn patch, or get unruly. I will try and do neither if I relate a little of my last fall's experience on the stamping grounds.

I tried a new wrinkle last fall; that is, I tried at it and at one time thought I had gotten myself into a jack pot with a small hand, but as luck had it, I got out of it by being bold. You know a stiff upper lip at the critical time often helps one out of a scrape, and it did me. This is as it happened.

I had a letter from a gentleman in the southern part of the state, asking me how the hunting was, and as I am known to be truthful, I told him that it could not be better; that I was well acquainted around the town and knew where the deer had their hang out places; if he wished to come out here for the season, I would be glad to assist him in getting located, and also guide him if necessary. He wrote back at once that he, with a friend and their wives, would be here at a set time and that I was wanted as guide, and to get every thing ready for them. That was about the time I began scratching my head, as I had never guided any one but myself, and that was at the point of the compass trying to get myself out of the swamps. This arrangement meant myself, and four others. I tell you it

made me sweat, but I stuck to it, and had everything ready at the appointed time. At the last moment I received a letter stating that the trip was postponed on account of one of the party being "as yet too weak to take the trip," but I would be notified later what day they would arrive. The first thought that struck me was: "Am I guiding some invalid?" That was pleasant. Supposing I should get them three or four miles into the woods, then have to carry him home again? It almost made my back break to think of it! All this time the season was on, and I was hunting as much as I could, and still meeting the train with the visions of a young strong man and an invalid, two women and a lot of camp supplies.

At last the day came, and here is what I saw: An aged man, with all the vigor of youth, an elderly lady leaning heavily on his arm, a young woman, the picture of health, and a feeble man leaning heavily on her arm, too weak to walk alone. And that was my hunting party! I had been a plainsman for eleven years of my younger life and faced perils such as would make the blood curdle in the veins of many a man, but I never felt as I did under those trying circumstances. The word "guide" took on a meaning it never had had before. Should I shrink at the last moment? or should I stick and let the outcome be what it would? I choose the latter, and boldly walking up to the elderly gentleman, asked him if his name was V. S. B. It was. Then, with a few suggestions, I placed the whole party in a hotel to rest up, and later had an interview with the gentleman in charge. My plans had to be all changed, and new ones made. That night I did not sleep. All I could see was my hunting party and all I could think what I should do with them. At last I hit upon a plan and it saved my hair from turning grey.

I suggested that instead of going way out in the wilds as we first had planned, it would be better to get lodging with a farmer who lived right in the best deer country I knew of, and then they could hunt when they felt like it, and rest when they did not feel like it. That plan went. I got them located, and my guiding ceased right there. They thought it a most ideal spot, and were more than pleased with their accommodations. The ladies would take short walks down logging roads, shooting rabbits and birds, while the men would go out sometimes alone, and sometimes I would go out with them, which resulted in each one getting a deer, even one of the ladies being fortunate enough to bag a small fawn, which came up standing in the logging road just a second too long to get away. When we became better acquainted, I found that the old gentleman was one of the truest sports that ever walked the trail; a man who had stalked the wood and

mountains for game all over the United States and many foreign countries, and, although he was seventy-four years old, was as supple and active as a youth of twenty.

I suppose you want to know what I did when I was hunting? Well, I was always either too quick leaving a runway, or the deer had just passed before I came, and that was about the way I put in the whole season. I followed tracks, watched, stood on drives, still hunted, made a lot of noise, and did everything one could do in order to get them a going, but without avail, until the last day of the season, and then I had given up all hopes when the award came. We have a railway logging road running about seven miles into the woods from town, and as the weather was rather damp the morning of the last day, I hired a pede and took a friend with me to wind up the season. We went to the extreme end of the road, and hunted until we were wet, tired, hungry and disgusted, as by that time the fog had come up so thick one could scarcely see ten rods away. I hailed my partner and told him I was ready to quit, but as I had about fifty cartridges along I thought I would try my luck at a few rabbits which were easily seen, they being white, and there being no snow. That went and we certainly had some fun for an hour. I bagged twelve and he four. Our agreement was "head off or no rabbit." When we had all the rabbits we wanted, we got ourselves ready, and homeward we went. We had gone only a half mile, when our pede jumped the track, and put it partly out of commission so that the best time we could make on a level track was two miles an hour. Up hill we went only as fast as we could walk and push the car, while down hill we went as fast as the gravity would carry us, and at times that was some. You know they are not so particular about grades on logging roads. We had pushed up and gone down all but the last and longest hill, when I told my partner that I guessed it was time to take a fiver, and we did. We made the final stride up hill and we finally reached the top, weary and disgusted. We got ready for a sensational coast for a mile and to help matters along, we pushed on the handles a little in order to get a better speed,—perhaps twenty miles an hour. Right in the middle of that hill was where we met the deer that was allotted me by the State of Wisconsin and I earned it, the way I jumped off the car. I went in the air some, made several long steps; turned just in time to see the deer going down a logging road forty miles an hour; swung my automatic .351 in line and let drive. The deer stopped, staggered, and another shot rang out, just as it was going down on its knees. That was all the shooting we had to do, I had pierced its shoulders, and the other fellow had put a hole through its ear which was used to put the tag in. We dressed

it, took it to the pede, loaded it on, and home we went, tired but pleased that after all that we had not been skunked, as so many thought I would be. The newspaper man allotted a whole column to my success as a hunter in the issue after the season closed. There were a great number of hunters here last fall, and most of them got their deer. And the best of it all was that there were no casualties, although one greenie took a poke at me. I guess he did not live in those parts, as he went wide of his mark about two feet, but nevertheless I did not like the smell of the powder he used.

Oklahoma Woods in Autumn

By J. BURR GIBBONS

NOT for years have the Oklahoma woods presented such a gorgeous panorama of color as this year, with the first frosts of November, the barren oak ridges have been transformed from their summer green and sombre browns into a riot of reds and yellow. The post oak ridges of the Arkansas and Cimmaron have taken on a garb of spring, while the lower Canadian oak, ash and pecan and pine in slopes and valleys present a brilliancy of coloring and a variety most noticeable.

With the approach of December, the blue haze of a belated Indian summer begins to hang along the hills and waterways and with the cooler night, the requiem of the dying year moves through the silent woods in sighs and winds and monotone of rustling grass and sedge. Vanished are the noises of insect choristers whom chilling frosts have benumbed and a

dying vegetation driven to the silence of burrows and crevices. Only now by the camp fire is heard the strident note of cricket or deep in gloom of the overhanging jungle the hoot of the owl or the faint whistle of the flying squirrel. Even day by day the woods are lonesome places. Along the showdy banks the fox creeps or here and there through the woof and warp of sunshine and shadow glistens the flame of a scamp-ering red squirrel vieing with nut hunting parties for his winter's store.

Afield and deep through the woods the smoothed sound of the hunter's gun floated and marks the presence of lovers of the wild penetrating even the remotest places. Far along the South Canadian from the piney woods westward to the Little River ridges, comes the sounds of hounds floating across hill and valley stirring the heart of the old timers of memories when the anise bag chase was not a necessity.

Overhead the feint honking of southbound and Canadian geese begins to come to the ear of the sleepless ones and rouses to regret, the unrestful spirit of the professional hunter who swore off last fall. Every fall a great number of hunters make up their minds it will be their last season's hunt, and sell off their guns, goods and traps, to discover that the old honk of a goose, the bark of a fox, the smell of a wood fire and the friendliness of a superannuated bird dog will upset all the resolutions and the first thing they know they are down to a hardware store and soon are decked out with a brand new duck suit, Remington automatic shotgun, and buttonholing their old pals for information as to where they can get a hold of an old bird dog. "Yes, I quit hunting last season," they will say," but my wife, you know, is not very well, and I thought I would go out and get a few quail for her.

Similitude

By CORA GIBSON HAMMOND

A forest aisle
A dim retreat,
With woodsy odors
All replete.
A silence good
A silence wide,
With quivering life
On every side.

A city street
A glarish way,
With many sounds
To fill the day.
A sound of strife,
A discord wide,
With quive ring life
On every side.

Piney Whispers from Camp Fire Island

By JOSEPH A. MORAN

PART II

WITH ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR



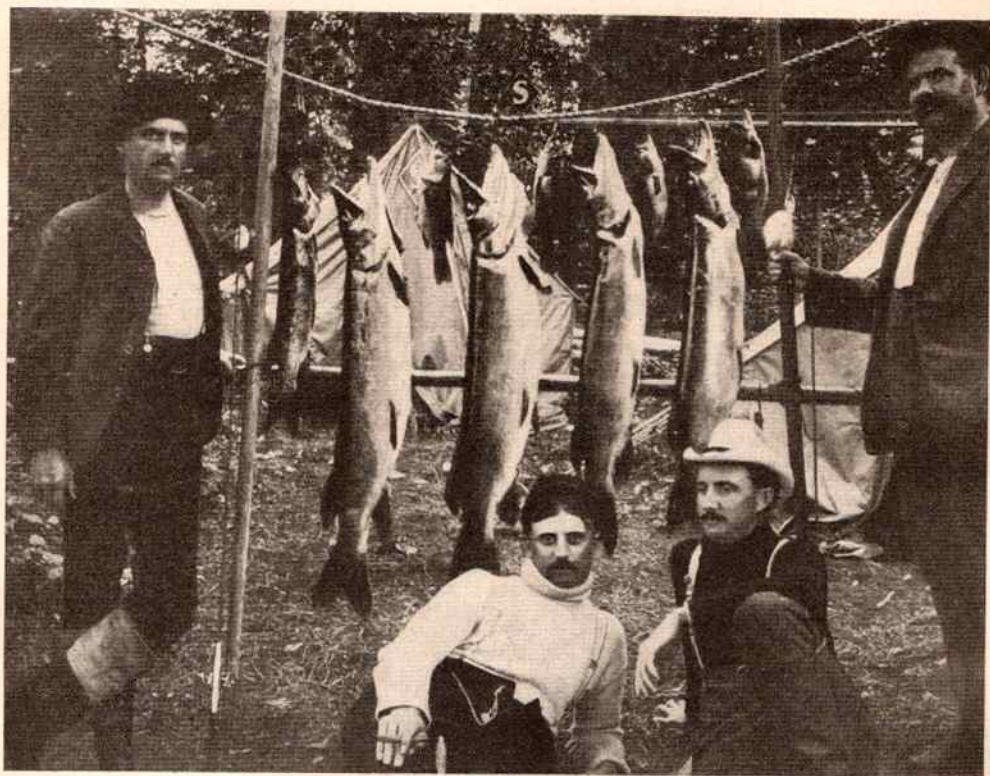
ABOUT dinner time I became fatigued combatting the watery gladiators, so I took the paddle and allowed Stanley to do the rod work. He went me one better and by the time the innerman would not be said "nay," we had quite a boat load of the festive big-mouths, two of which went seven and five pounds respectively.

We were happy as only an angler is who has been fortunate enough to wet his lines in such waters. Upon attaining the foot of the lake we went ashore at the dam and after selecting a few medium-sized edibles wended our way up the winding trail to the old F. C. Leonard logging camps. We proceed to fry the bass which Stanley and myself caught for the very sufficient reason that we could better save Taylor's and Oscar's catch on account of lesser bulk and the admirable live-box which the stern of their craft afforded. What memories were ours as we approached those rustic shelters which in years gone by had solaced the sinews of some of the hardest knockers produced in the valleys of the Mississippi and the St. Lawrence, and again, we heard in stupendous chorus the annals of the woods butcher.

"The forests so brown at our stroke go down,
And cities spring up where they fell;
While logs well run and work well done,
So the story the shanty boys tell."

Time's remorseless inroads have given extensive logging in pine the knockout blow in this region, and as a sequence the bonafide lumber jack has relinquished his holdings, the turf beneath his feet, which is the only variety of real estate he ever owns and which he relinquishes only through the stress certificates of a longer reach and a heavier wallop. In the old cooking shanty we found every necessary convenience including a mammoth range of eight lids. The men's shanty also contained a huge Arctic pacifier. On the big range we fried the delectable bass and baked the murphies in its commodious oven, which had often accommodated an entire quarter of beef. By the time we completed our culinary task and had

banqueted to the innerman's entire satisfaction it was toward evening and so we lost no more time but prepared to paddle up the lake toward Camp Fire Island. It was while I was baling out the canoe and arranging the fish that I observed Taylor scouting about in an apprehensive sort of way. I inquired as to his peculiar action and he replied, "I'm looking for tracks of Paul Bunyan's ox that was four feet between the eyes, and that used to haul a peaker of white pine down to Chicago every day and bring back a load of Peerless. On the way back we caught a nice musky by trolling and Taylor speared a large wall-eyed pike while traversing the thoroughfare. We also had the added pleasure of observing the much sought after species of our fauna the one that is as big as a barn door and wears an inverted rocking chair on his head. They evidently mistook us for the valient nimrods who make the manufacturing of cartridges almost a gold mine, and who were here during the month "when the red gods call." They were loath to leave and it occurred to me that perhaps they were looking for a "tip" from us which was undoubtedly in justice due them when we consider the rebate the nimrods got through their large consumption of ammunition. The makers of sporting rifles and loads should be in the van when it comes to protecting game. Their very existence financially depends on its remaining extant. In the glow of evening we approached the island and if there is any picture more alluring to the weary outer than was presented to us there, I crave the ecstasy of beholding it. How beautiful did the camp fire appear reddened against the gloomy background, casting its ruddy and fitful reflections, while the smoke arose caressingly through the wind tossed branches of the pines which tower above their lesser companions as conspicuously as the old line Jack does above the promiscuous assortment of woodsmen pursuing that calling to-day. The camp fire appeared like a giant ruby set in emerald colored velvet when we saw it from afar. Then attuned by evening's zephyrs was borne to us on aerial pinions a welcome hymn plaintively chanted by the harps of the North. During the evening it devolved on me to replenish the water supply and so in company



AT THE END OF THE DAY

with Oscar we launched a canoe and paddled over to the landing. While I was filling the buckets at the spring Oscar went up the slope to gather wild roses with which to garnish our festive board. He came running down to the spring in great haste and excitedly informed me that a heavy lumber wagon was quite near to the lake as he had heard its loud rattle. I surmised what had caused the impression, and urgently requested him to go down the road to meet them, which he did.

"Then the bullfrog, the Dahinda,
With his yellow eyes, glared at him,
Sobbed, and sank beneath the surface."

The moon's mellow rays lit up the lake as we glided back to the island and if the weary dweller in the busy marts of industry wishes to experience holy calm in the highest, let him while away a few weeks revelling about those antique forests in "the land of the white rabbit." In this plebeian atmosphere the usually suave and learned advocate disported himself as became a child of nature with a sufficiency of red corpuscles. As a result he was a constant terror to Oscar who had included in his wardrobe such luxuries as a change of underwear,

a comb and a tooth brush! It is a fact worthy of mention that no matter what our station was in municipal life, in the jungles we were on a common level.

The latter fact was so evident that I occasionally discovered it when after meals in order to solace my overwrought nerves I would resort to the use of nicotine, but as a general thing I would be met with "All things are held in common here," and be forced to forego the pleasure of smoking by observing my previously filled pipe between the teeth of the counselor. With each succeeding stumble over a recumbent tree or dip in the lake we could feel the veneer leaving us, as the velvet leaves the horns when a deer rubs them against a rough barked tree. In our little sylvan community there were no subterfuges, no shifty glances, everything was above board and straight from the shoulder. It is the inexorable edict of the wilderness that the fittest alone survive, and in some subtle way we felt its rectitudes and "spoke with naked hearts." What an antithesis to urban life! Somnolently we gaze into the dying embers of the camp-fire as

"The first sweet hour of gentle evening,
Flies on downy pinions to eternal rest."



IN THE THOROUGHFARE, KING AT THE BAT

The final whiff is taken, ashes knocked from the pipes, and we retire to the tents to be swiftly lulled to unconsciousness by the scarcely audible swish of a sylph's invisible pinions.

"The smoke of the campfire drifts away,
On the breath of the summer air
And the heart beats light, and the soul is free
From the talons of clinging care."

There the soul's as free as the air of God,
And the heart of the bosom leaps;
As the stars keep watch all through the night,
While the man of the camp fire sleeps."

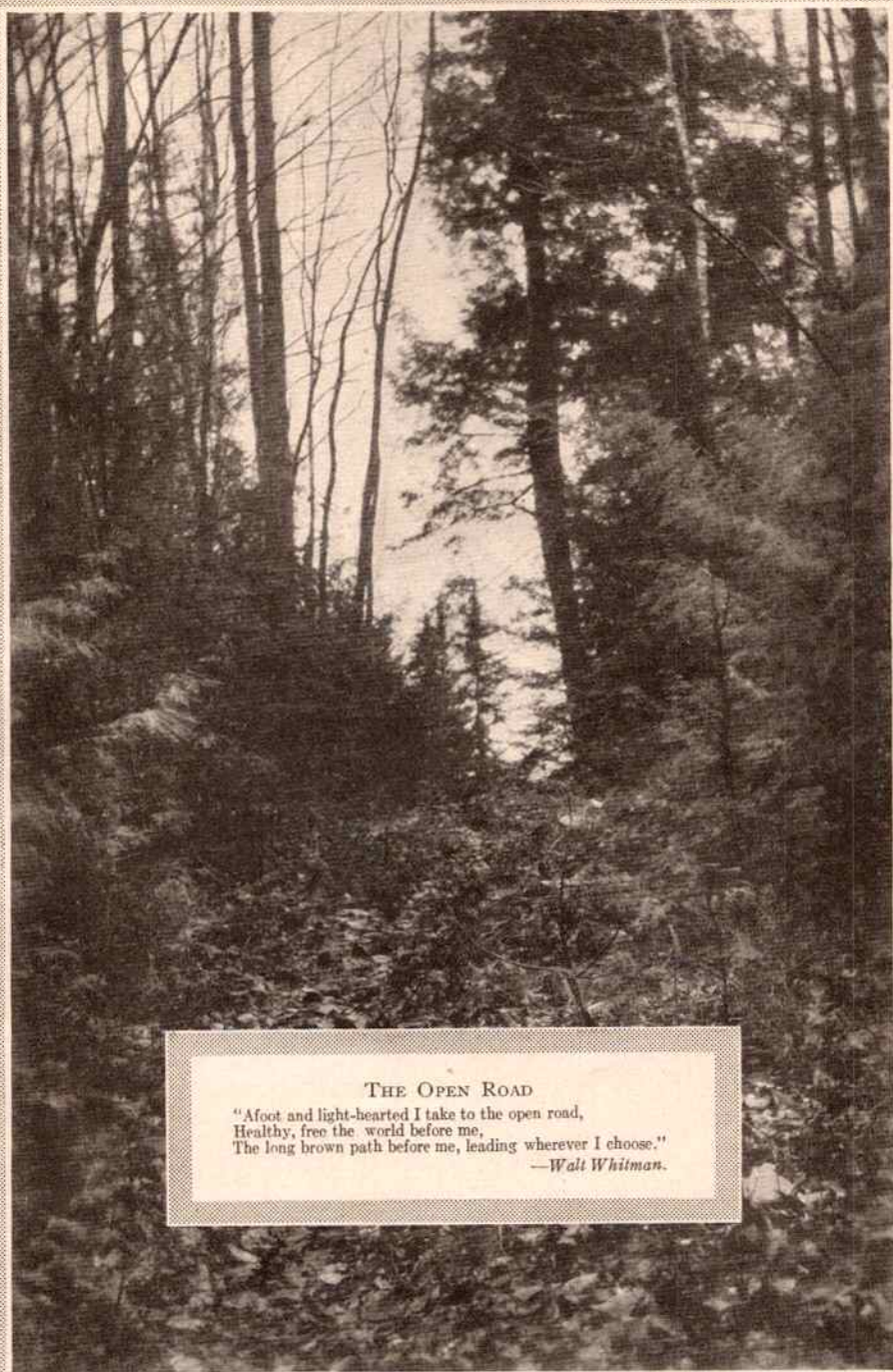
The following morning Oscar, who was evidently hard put for diversion, conceived the idea of giving me an eye opener. The water cure brought me out of it with dispatch, but on the wrong side of the bed, and I forgot to kneel down and say my prayers as is usually my custom (?) I "saw red" for a brief moment and came near to departing from "Honor's laws." When I thought the second time I saw that "to assail a weary man were shame, and stranger is a holy name." Despite the informal trend of affairs it struck me that he was getting very familiar on short acquaintance.

As Herb is an expert swimmer he amused us during breakfast by disporting himself like an amphibious mammal. He dove out of a canoe and then climbed back into it again in deep water. This looked easy—try it. Stanley and the scribe performed the dual act of diving out of a canoe while going through the thoroughfare, but as it was entirely an involuntary performance we did not mention it. Andy King made his appearance for the first time since our arrival and was observed circling rapidly about musky point. Consequently Taylor and Oscar decided to try for a cuirassier, as soon as Andy desisted. They succeeded in landing a twelve pounder. Oscar was so much taken up in the mechanism of the automatic gaff that he toyed with it until he nipped his index finger. Taylor rapidly rowed him back to the island lest his decease occur in transit. As it was he fainted. The emergency satchel was called into action and we soon had his lacerated digit dressed. He rested an hour in the tent after which he emerged looking for more trouble. Stanley invited me to accompany him to Bass Lake so we hiked over and while drifting about from one dreamlike cove to another angling

for small-mouth bass we had the unique experience of seeing a large timber wolf come down and slake his thirst. The attorney was certain that it was a fawn and would not let me shoot, otherwise it is my opinion that we would have collected a little bounty. For by the time his identity was established it was too late to use the Winchester pump on him. Coming back to camp we dropped in on Andy at headquarters, and from his aspect and remarks we judged that he had something up his sleeve to sping on us for when we were leaving he warned us to prepare for the inevitable, accompanying this admonition with a very loud wink. Just before supper it came. I heard the angry hum of a bullet as it hustled over the island and I judged it to be a range finder. In some strange way I got a hunch that there would be something doing directly; and so I sympathized with the tenderfoot, otherwise Oscar. With the ensign of the republic at the prow of his boat and a .45-90 sticking out toward us Andy arrived amid smoke and foam. Throughout each burst of vociferous rhetoric the punctuations were rifle shots, the terminations wild cat yells. Perfect and horrifying surprise was stamped on Oscar's visage, Jesse James and Nick Carter were parlor performances in his opinion as compared with Andy and his menacing vengeance. Having attained wading distance of the shore he recharged his piece and landed with panic-stricken pandemonium and in complete panoply of war. Approaching Oscar he yelled: "Do you want to see a little fancy shooting?" A tremulous negative did not stop him. Drawing his hunting knife he described several curdling curlicues about our top knots, and although I "was on" I almost winced when he suddenly jammed the handle of it against my breast. It was a joke but terribly realistic. At the muzzle of the Winchester he made the coon "hash up" for him and after a pretense at eating, he informed us that he had a notion to raze the entire island and emphasized his remarks with some very reckless shooting. Finally he jammed his red cap down over his ears and giving us a parting volley disappeared into the night still indulging in artillery practice. It was an ostentatious sham from start to finish, but it was as terribly real to the tenderfoot as any nightmare could possibly be and infinitely more terrifying. He had taken the bumper and was thankful to find himself still animate. To men like King who lead such lonely secluded careers, the wilderness at times depresses to such an extent that in order to counteract the effect they go to extremes in their frenzied outbursts of animation thus seeming to regain in brief time and within small compass the tenor they are naturally intended to maintain.

As the next evening was overcast with clouds, we rigged up the dark lanterns and went out around the coves of the lake to indulge in a little shining. The vague mysterious calm which follows the spreading of night's pinions possesses an intoxicating influence. This in conjunction with the fantastic shapes assumed by trees, shrubbery, etc., rapidly transports a person to the region of gnomes and elves. The silent paddling, the enveloping darkness and the constantly changing panorama within the arc described by the light gives to this form of sport an exceptionally abstract quality which causes the plunge of a rat into the lake to sound as loud as the crack of doom and equally startling. How spectre-like the timid animals appear as they come remotely under the light's influence with the large liquid eyes glowing as they rove about seemingly in space like large fire flies and practically as fitful. The deer at night as seen from behind a light has a very stilted appearance. A person once partaking of this form of sport will always remain a devotee. For with a camera a sportsman can shoot deer every month in the year.

The livery team being behind schedule it became necessary for Stanley to return on foot as legal matters and clients demanded his presence in the city. So after a final banquet he hit the hay road on the long, lonesome twenty five mile hike to Glidden. It requires no little amount of nerve to undertake this trip over the wild unfrequented road. But he made it all by his lonesome, arriving as we afterwards ascertained about midnight. Companionship is a jewel as one quickly discovers when out in those wild hungry wastes, consequently we voted him "a hero's son" and "Called him Strong Heart, Soan-ge-ta-ha, called him Loon-Heart, Mahn-go-tay-see!" Some resolute follower of the chase speaking in his blood undoubtedly is the progenitor to which Stanley harks back, and to whom the chase was "mimicry of noble war." A day later the conveyance arrived so we regretfully packed our dunnage. This completed we bid a reluctant valediction to our brothers at the island and proceeded to Glidden where we arrived safely after the usual ordeal of wilderness travel. Such are the salient annals of that artificially untrammelled outing trip. An enjoyment so acute, that none, rich or poor, should go without. Impecunious scruples do not avail, as may be averred from our expense account. Including the livery statement it amounted to but twelve dollars. Divide this number by four and if you are proficient in arithmetic you will note that it is less than half of what it would have required to live in the village for the same length of time.



THE OPEN ROAD

"Afoot and light-hearted I take to the open road,
Healthy, free the world before me,
The long brown path before me, leading wherever I choose."
—Walt Whitman.

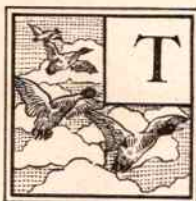
Our Feathered Friends

PART I

By A. G. RAETH

Secretary of the Wisconsin Game Protective Association

WITH ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR AND OTHERS



THE coming of spring and summer again brings to us, who live in northern climes, an influx of migratory birds, both insectivorous and game, from the south. To many of us the arrival of the birds will mean much pleasure in studying the habits of our migratory visitors. Reports show, however, a remarkable decrease in birds during the past two years. On the other hand agricultural products in many states are threatened by an annual loss amounting to millions of dollars because of an increasing horde of insect pests and rodents. The author proposes to make plain to the reader the extent to which wild birds most effectively contribute to our welfare in destroying injurious insects, noxious mammals and worthless weeds. But why this rapid decrease of bird life? Why are the birds vanishing? Dr. W. T. Hornaday, the director of the New York Zoological Society, has recently collected and compiled statistics from thirty states, showing that a loss in bird life within the last fifteen years has averaged over forty per cent. In accordance with such figures, twenty years from now would show a total extermination of many species of birds. The chief factors in the destruction of our native birds are English sparrows, hawks, crows, black buzzards, cats, dogs, foxes, so called sportsmen, alien and market hunters, the cutting off of timber and shrubbery, bird shooters and trappers, egg collectors, boys with sling-shots, air guns and small rifles, milliners' hunters, draining of marshes and meadows, gun clubs and hunting contests, the destruction of nesting sites, storms, telegraph, telephone and other wires, etc., etc. To man or the "man behind the gun" may be attributed chief responsibility as leader for the diminution of bird life. Some time ago a band of Japanese raiders were captured by an American war vessel on one of the Hawaiian Islands with 1,000,000,000 skins in their camp. Japs are reported as having slain millions of birds in Hawaii. W. Alanson Bryan discovered that an outlying Hawaiian island was yielding 50,000 skins every six months to traders. But plume hunters are at work all over the world and gruesome tales are told of some in the Pacific states who often boasted of making \$400 to \$500 a day in the slaughter of white herons. One

man stated that he had made \$1,200 in a day and a half by exterminating a pieciful colony of these birds in southern Oregon. Another frankly admitted that in one season he had made a kill of 125,000 birds. As testimony shows, this brute was a commercial plume hunter in Florida. And what conclusions can we gain from this statement that imports of millinery feathers to this country are valued at about \$11,000,000, while the valuation of diamond imports at the last census was only about \$12,000,000? The plumage of some birds is sold in cities for \$15 an ounce. Now do you wonder why the birds are disappearing? The history of bird protection shows us that in 1884 the plume hunters began their gruesome business of extermination on islands along the Atlantic Coast. Numberless nesting colonies of terns were annihilated. The same was also found to be the case in other countries; for at this time a shipment from Archangel, Russia, is said to have contained ten tons of wings. At the present time many species of birds have been exterminated and it is feared that many others are nearing extermination—and all because women still desire to adorn their headgear with a plume or two from our innocent feathered friends!

"Think of your woods and orchards without birds!

Of empty nests that cling to boughs and beams
As an idiot's brain remembered words

Hang empty 'mid the cobwebs of his dreams!

Will bleat of flocks or bellowing of herds

Make up for the lost music, when your teams

Drag home the stingy harvests, and no more

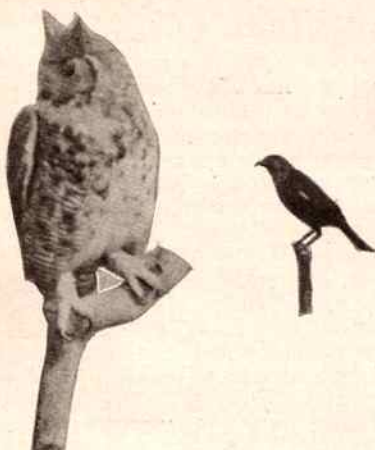
The feathered gleaners follow to your door?"

It is man then; man and his works, that are chiefly responsible in considering the causes of bird destruction and bird extirpation. When reflecting the causes of the decrease of birds Mr. Edward A. Forbush, state ornithologist, Massachusetts, has the following to say in a special report: "The destruction of birds by the elements or by their natural enemies is not to be compared for a moment with that inflicted by man on all species that come within the scope of his wants. Destruction by the elements is very serious occasionally, but it is usually followed by long periods of immunity. Destruction by natural enemies is only occasionally and locally excessive, except where man introduces some foreign factor, like the cat.

Man's persecution is annual, perennial, extended and excessive. It gives a species no chance to recover. It seldom stops short of extermination unless restrained by stringent laws efficiently enforced." Can anything be more convincing than what these few lines contained?

Let us take up some of the causes of bird diminution, as I have outlined them above. English sparrows head the list. Many of the readers and the public have not yet realized the annual damage done by English sparrows and cats. By many who know him, the Johnny Bull sparrow is always shown in a bad light. We know but little good of him. The evidence against him is strong. He has been found guilty of many crimes and misdemeanors. John Bull is therefore condemned to die, according to the findings of juries of several govern-

Bull?" Just be patient for a moment please, I have a few more things to add about him. Fifty sparrow stomachs contained beneficial insects, and thirty-one contained insects of little or no economic importance. Reports also show that this bird is cunning, vicious, filthy, quarrelsome and destructive, and that it destroys fruits, such as raspberries, grapes, cherries, plums,

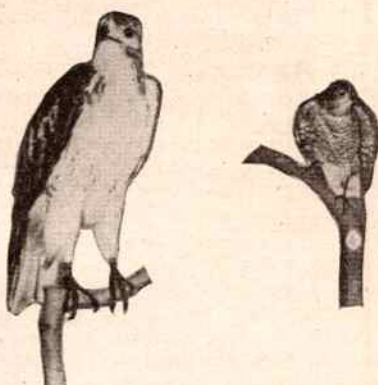


OWL AND BLACKBIRD

Owls are classed among the most useful birds known to agricultural interests.

(Small Bird)—The golden or yellow headed blackbird. About seven-eighths of the redwinged blackbird's food is made up of weed seed or of insects injurious to agriculture. Only in places where over-abundant do blackbirds prove troublesome.

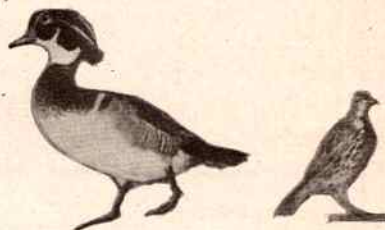
ments including our own. The English sparrow is shown no mercy. In the city the sparrow often proves himself a nuisance, but in rural districts and on farms, he is nothing less than a pest. Sparrow clubs have been organized and farmers are using every available means to bring about a total extermination of the Johnny Bull families because of their destructive habits. Of course the sparrows do at times consume numerous insects during the summer months, but to such slight extent that little can be added to their credit, as scientists have shown. Their records as destroyers of insects show them to be of no importance. Out of 552 English sparrow stomachs examined by the Biological Survey, forty-seven contained noxious insects. Did I hear some one say: "Bully for you, Johnny



HAWKS

"A single species of the hawk saves western farmers \$57,600 annually by killing grasshoppers."

pears and peaches. Considerable damage is also done because of the bird's fondness for seeds, attacking small grains at all stages of growth. The annual loss to the grain crop inflicted in this manner has already amounted to thousands of dollars. And do you know that this rascal of a sparrow has reduced the number of some of our most useful native songsters by destroying their eggs and young, and by usurping



WOOD DUCK AND MEADOW LARK

The Wood-Duck—America's most beautiful wild duck now rapidly decreasing in numbers.

The Meadow Lark is the arch destroyer of the grasshoppers.

their nesting places? The species of native birds generally attacked in this manner are the house wren, the blue bird, the purple martin, the phoebe, certain swallows, the red eyed vireo, the cat bird and the mocking bird. The English sparrow was introduced in Brooklyn, New York, about sixty years ago. The bird's pernicious activity has won for it a name of ill repute and



BROODING EGRET WHOSE PLUMES FURNISH THE "AIGRETTE OR "OSPREY"

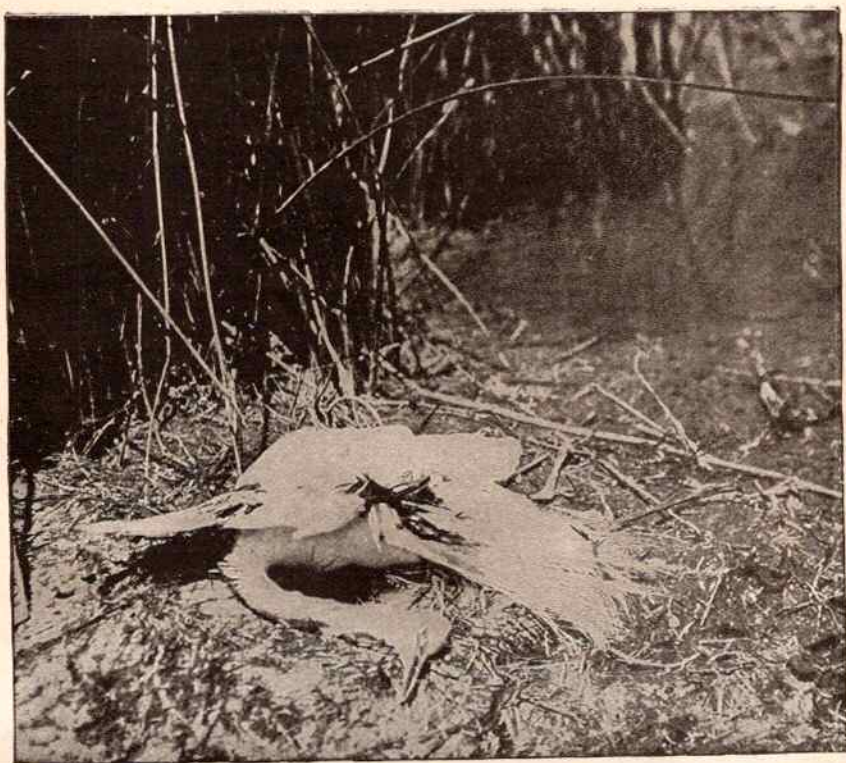
It is during the nesting season only that an egret's or heron's plume is most beautiful. (Courtesy of William Dutcher President The National Association of Audubon Societies.)

an effort to rid the pest from out midst is nation wide. From the preponderous evidence gathered we come to the conclusion that the English sparrow is of no economic value and is an undesirable member of the feathered race. Therefore, we should feel free to reduce its numbers and to exterminate it wherever and whenever possible, as is advocated by the government biological department.

Let us discuss in a general way the hawks, crows, jays and other birds in part responsible for bird diminution. There are two species of hawks which feed almost entirely on wild birds and poultry. These are the sharp-shinned and Cooper hawks. Of the other predaceous birds Dr. A. K. Fisher, in charge of economic investigations, Biological Survey, Washington, D. C., speaks in this fashion: "The sooner farmers, ranch men, horticulturalists and nurserymen learn that the great majority of birds of prey are their friends and deserve protection and that four or five species only are injurious, the sooner will depredations by noxious rodents and insects diminish." Owls may be classed among the most useful birds known to agricultural interests. These birds should be afforded protection by law in all states. In 1886 Dr. C. Hart Merriam, then ornithologist and mammalogist of the United States Department of Agriculture, his assistant, Dr. Fisher, and Dr. B. H. Warren, examined over three hundred and fifty stomachs of hawks and owls

killed under the scalp act that existed in Pennsylvania at that time. Ninety-five per cent of the food materials of these birds was found to consist of "mice and other destructive mammals, grasshoppers and injurious beetles. The common crow (*Corvus brachyrhynchos*) is known in many localities as despoiler of the nests of other birds and proves troublesome at times by killing small chickens and birds. The same is true of jays and ravens, although they occasionally do effective work in destroying pests. In one case in 1909, between April 1 and July 10, twenty-five per cent of the chickens hatched were destroyed by crows in Rhode Island. In another case cited eighty-seven per cent of ducklings hatched were destroyed by crows. Poultry men suffer serious losses by the crows' depredations and no mercy is shown the rascals where poultry raising is carried on to any extent. The name of *glandarius* has been given to the jay because it feeds on vegetable productions such as acorns, etc., more than the true crows. This bird is also partial to fruits, especially ripe cherries, and is, therefore persecuted by the gardener. That it also frequently devours eggs and young birds cannot be denied.

The cat as a rodent is the next in line to be reprimanded for its wrong doings. Cats are known to be largely responsible for a large percentage of the destruction of bird life during the past few years and nearly all naturalists do not hesitate in advising the killing of all the



THE COST OF A PLUME. THE PICTURE TELLS ITS OWN TALE
(Courtesy of William Dutcher, President The National Association of Audubon Societies.)

cats that wander into the woods. In spite of feeding cats well, they are known to go out nights and kill birds and rabbits.

Miss Ella had a kitten

That was so very small,

She had to carry it about,

For it could hardly crawl.

But when it grew to be a cat,

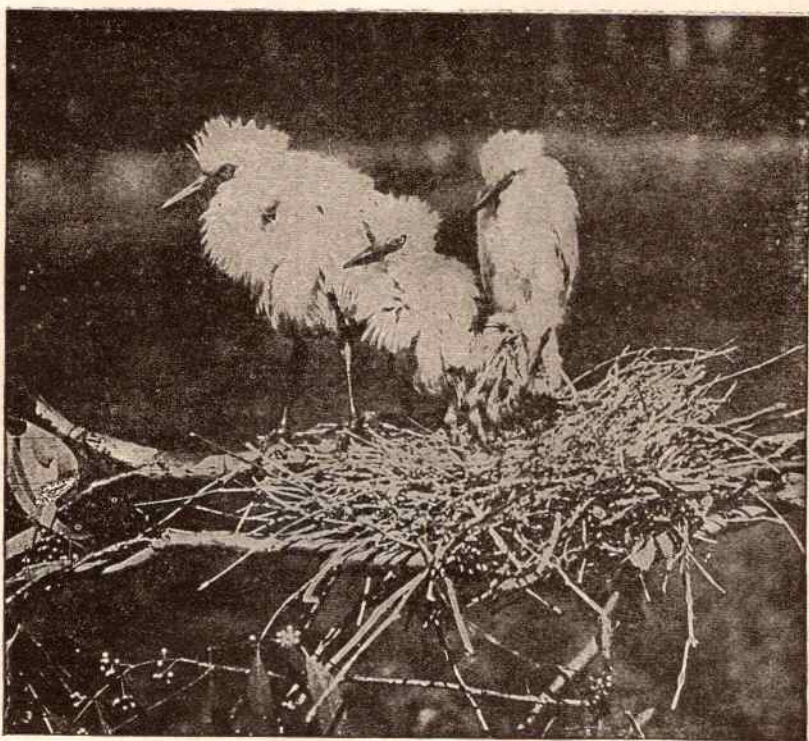
It never could be found;

It was hunting pretty rabbits

In the woods for miles around.

That is the same cat that destroys our birds. Kill it whenever you meet it in the woods or fields. It is estimated that in the New England States alone 1,500,000 birds are destroyed annually by cats. The rat, too, is causing a great deal of trouble in many localities by his fondness for chickens, eggs, and wild birds. The same can also be said of the red squirrel where they are abundant. These marauders destroy great numbers of eggs and young birds. The skunk is branded by many farmers as a chicken thief. Reports show, however, that skunks often render important services by destroying mice, crickets, grasshoppers, white grubs, wasps, hornets, cutworms and other noxious forms of life to be found about farms. The writer has the following experience to relate about the skunk as a chicken destroyer.

While spending a few summer months on the farm and summer home of Dr. Gustav A. Kletzsch, a Milwaukee physician, at Summit Lake Wisconsin, I had occasion to become personally acquainted with the chicken thief's tricks. Together with a young physician of Milwaukee I enjoyed my sleep in a small tent that had been pitched in the back yard. One night "Doc" and I were suddenly awakened from our peaceful dreams by the howling of the house dog and the untimely cackle and noise that came from the various hen coops in the yard. With my .32 caliber gun in hand, my companion and I slipped out into the dark to see what was causing all the disturbance. We could see nothing. Thinking that perhaps I might gain a better view of the things about me I stationed myself on a small porch at the rear of the house. Suddenly a dark object rushed past immediately beneath my feet. I fired twice in quick succession but the thing I saw flashed out of sight. We became convinced that the "thing" I had seen was the cause of all the noise of the night. Doc and I retired without further annoyance that evening. The next day the caretaker of the farm estimated a loss of twenty-two small chicks. Two injured chicks, that had been located beneath a woodpile, were placed in a set trap respectively for the purpose of catching



FEATHERLESS AND MOTHERLESS

There is no one to feed them, they are growing weaker. One is already dead from starvation and exposure. (Courtesy of William Dutcher, President The National Association of Audubon Societies.)

the intruder of the night before. Sure enough, the game worked splendidly. The chicken thief was caught fast with a forefoot in each trap the next morning. A bullet from my gun soon put an end to his fiendish career. Upon observing the skunk more closely I found that the tail was missing, so I must have hit him after all the night before. No doubt I did for the wound was still fresh.

When considering the value of predaceous animals, little can be said in favor of either the wolf or the cougar. These animals have been known to destroy large numbers of rabbits, sheep, cattle, deer and other big game. Even horses are said to suffer from attacks by these vicious creatures. Buffon, the naturalist, brought up several wolves, and he states that they were very docile and caressing the first year, and if well fed, would not disturb birds or other animals, but when about two years old, he had to chain them to keep them from running off and doing mischief. One he brought up in a court yard of fowls, none of which he attacked until he was nineteen months old, when he killed the whole of them in one night. The wolf is a mammal of the order carnivora, or flesh-eating animals and of the dog family. The fox is the terror of hen-roosts in some localities. While we know it to be true that the fox will hunt

hares, seize and destroy a vast quantity of birds and game, he will, when other food fails, make war against rats, field-mice, serpents, lizards, toads, insects, and moles. Of these he destroys great numbers and therefore renders great service to the farmers. That the mink and weasel destroy birds cannot be disputed but their incessant prey upon mice and other rodents has benefitted man much in many sections. In comparing the value of predaceous birds and mammals, naturalists and scientists have found that these birds and animals will seek other nourishment only when the normal food supply is scarce. It is from force of necessity then that predatory birds and mammals often become a nuisance about the farm.

It is comparatively easy to comprehend how the cutting of timber and shrubbery will inconvenience the living habits of birds. It is the heavy undergrowth that has often saved many game birds from further pursuit by the hunter and his dog. Many species of birds cannot increase their numbers under unfavorable conditions where lawns, golf links and grassy parks have taken the place of large wooded areas of land. The same can be said about localities where meadows and marshes are drained. The draining of lands causes the diminution of food and nesting places and the birds, therefore



BECAUSE THEIR MOTHER DOES NOT RETURN

Awaiting the end. They are too weak to stand or cry for food. Death will be a happy release. (Courtesy of William Dutcher President The National Association of Audubon Societies.)

are obliged to aggregate in other sections. Hunting contests by gun clubs are still favorite pastimes in many states. Hundreds of birds have been killed in these deplorable side hunts. "This association of hunters in rivalry," says Edward Hower Furbush, ornithologist of Massachusetts, "to kill game is a blot on the history of civilization. It goes beyond the rapacity of the savage. The native Indians expressed disgust when they first saw the white man engaging in this kind of slaughter. It should be prohibited by law." It is stated by some authorities on the question of bird diminution that probably thousands of birds are injured or killed annually by flying against trolley, telephone and telegraph wires. Besides the small birds, grouse, rails, ducks and woodcocks are known to have been killed by stretched wires.

During nocturnal migrations and storms thousands of birds have been lost by flying against light houses at night. In the region of the Florida Keys in April, 1909, tens of thousands of birds were killed in this manner during a violent thunder storm. The dead birds were so numerous that it was difficult to walk anywhere out of doors without stepping upon them. On November 11, 1909, a newspaper despatch from Chillicothe, Missouri, said that during a heavy rain that morning, lightning killed a flock of ducks flying over the home of Jacob Bruner, a few miles south of that city. Bruner walked into his yard and picked up forty-six birds.

Boys with their air rifles and ".22's" are always destructive to small birds if not restricted. Boys will shoot at all animated nature for the sake of killing and making a record, whether it is legal or illegal. Boys and foreigners, who

carry firearms in the country, often prove very annoying to farmers by shooting at the barn yard fowl and cattle. Small boys should be forbidden to carry guns of any description. The greatest danger, which reports show, that threatens most of our states, is the shooting of song birds by foreigners. Complaints of this nature are coming from most of the Atlantic States. It is said that in the South Atlantic and Gulf States, foreigners and natives, shoot small birds in winter for the market. Recently an Italian was arrested near Grand Island, Nebraska, with a gun on his shoulder and eight meadow larks swinging gaily from his belt. The justice of the piece assessed the shooter \$80.00 and costs. In Italy and other Mediterranean countries birds are becoming things of the past, so savagely have they been persecuted. This same condition of affairs is threatening our country and foreign immigrants should be taught to obey the laws of the Commonwealth.

That the slaughter of feathered creatures for millinery purposes still goes on in many sections of the American continent and outlying islands can be readily conceived from the above illustrations and figures cited. The bird to suffer most at the hands of the milliner butchers is the egret. The hunting of this bird is so persistent that its species is rapidly decreasing. The female bird offers the best piece of plumage for ornamentation. The birds are attacked when rearing their young. Mother instinct causes the snowy herons to brave the attacks of the men for the purpose of protecting their young. With ease the mother bird is deprived of its wings cast aside (oftentimes still alive) while the young are left to starve in their nests.

[TO BE CONCLUDED]

Quail Shooting in the South

By W. L. COLVILLE (Dick Swiveller)



THE quail *ortyx virginianus*. "Bob white" breeds in almost every state in the Union. It is the typical game bird and is probably sought after more by the sportsmen of North America than any other game bird, the reason for this being, it

can be found in localities where other game birds do not breed or migrate to. Take for instance a large portion of Virginia, North and South Carolina, Georgia, Alabama, Louisiana and Florida, no other game bird is found in what is called upland shooting unless it is the wild turkey, which is not shot over dogs and does not, therefore, offer the sport peculiar to shooting over setters and pointers. In many of the northern and middle states snipe and wood cock are found in addition to "bob white." In the southern states the only shooting one has over dogs, unless near the coast, is on quail—or the very difficult following of the ruffed grouse in the thick woods and cover of mountain localities of certain southern states. Hence the very large proportion of sportsmen resident in these states know no other shooting for prime sport over dogs than to follow the quail. "Bob white" by the way is deserving of right honorable mention. He is a dainty, plump, clean and well behaved little chap. He does all he can to increase and multiply, and bring up his large family to the day they can care for themselves, dividing all the labors with Mrs. Bob White. He has some funny ways—he is courageous—and at certain times pugnacious. Mrs. Bob, when caring for her young and promising family, is plucky to a degree. In defending her young from danger she exhibits a courage really wonderful, and will not take wing unless in immediate and dreadful danger of capture.

The individual who would at such times kill the parent bird, or at any time entrap a whole covey and then wring their necks, is fit for treason, treachery and spoils. He can have no heart and is not entitled to the name of man. He is the same wretch who would creep up within gun shot of the male bird and shoot him from his perch on the fence or log while poor Bob was doing his best with his merry whistle to encourage and help his spouse through the toils of incubation, sitting hard by on her nest.

The Southern States afford the best quail shooting to be found in the United States. Each season finds the number of northern sportsmen increasing in the South. There is scarcely a town or village in any of the southern states but may form the center of a fair, or extra good quail country. I am of the opinion, however, that the southern shootings will in time be greatly restricted, through the formation of clubs made up of southern and northern members who are buying, leasing or renting large areas of land to be used as a game preserve exclusively for members. In a number of states these exclusive clubs exist, and the number is being augmented from year to year. The scarcity of game in the northern states; the increasing number of sportsmen and the comparatively low figure at which land can be rented, posted, and birds cared for, and the accessibility to points in the South is responsible for club formations.

On my first going south, many years ago, I was surprised at the vast territory offering such superb shooting on quail. At that time the hotel accommodations, and boarding houses generally, were not good, but since there has been an exodus of northern visitors south for pleasure and health, going and coming all through the winter. This, combined with the ubiquitous commercial traveler, has compelled mine host to offer better bed and board. At all events, sportsmen now going south for the shooting will get on pretty well at the hotels. Private families also take winter boarders—all over the South.

In *anti-bellum* days the shooting south was all that the sportsman could possibly desire. Then the plantations were like immense game preserves, none but white men shot. Now the negro roams at large with his army musket, or one of those cheap single barreled breech loaders, and a yaller fice dog in quest of game. He shoots anything from the smallest song and insectivorous birds to deer. He pays particular attention to rabbits—he will shoot into a covey of quail bunched on the ground—or traps a whole covey at once, and the old woman wrings their necks as they are wanted "fur stewin' or fryin'."

* * * * *

Standing by an old rail fence I look over plantation fields of probably 1000 acres, some

grown in brown sedge grass. Away to the northward and eastward of the fields loom up the grand pine forests more delightful to the eye because of the dreamy blue haze hanging over the landscape, the air clear and crisp laden with the odor of balsam and pines, the brightest of southern winter suns looking down, the light frost of the night visible only in spots where the genial sun rays had not penetrated.

Two dogs charged down at my sides—"Nero", a wise old pointer, fine retriever, and "Ned", a setter, great on working up a covey—both ready for the glorious sport on this fair day, looking at me with the loving brown eyes mutely asking "Where can we go?"

A saddle horse standing nearby completed the picture. Dogs, horse and man, near and dear friends, and were about to add another day of sport to their many already passed in which they tramped the fields and woods together.

It was a fair picture—a happy hour. In retrospect I go over that day and many such days before and since and wonder if I shall be permitted to again enjoy to the full such pleasure and happiness.

Mid the dim of towns and cities—mid the throngs of hurrying men—mid the pleasures of a dense civilization, there is nothing, absolutely nothing, that man can reap so much pleasure from, or enjoy a more healthful excitement with than these days afield. It was a beautiful morning in early December that found me standing by the old rail fence. I had ridden three miles or so to reach this particular plantation. Nine o'clock found us ready to work the covers. Leaping to the top rail I sat for a moment before casting the dogs off—"Nero—Ned—hie on!"

Over the fence and away they go quartering the ground faithfully and at a fine pace heads up to catch the faintest trace of scent. I was almost ready to follow on; at this moment Ned turned to quarter to left going at a fine pace; he caught the feistest trace or scent and stopped instantly for one moment of time, then with the nose in the air trotted on a few yards—first to the right, then to the left—then right quartering, slower, slower—stopped—one foot raised—head turned to the left—he straightened out. He had found them—"Nero had stopped until the point was established, now came on cautiously and backed the setter in good style. There they stood, one behind the other, twenty feet apart as if carved of stone—staunch and true. Good dogs—if I do half as well as you today I will have a dozen brace or more of birds.

In this broad field that a man might walk over a dozen times and not go near the birds—the dogs, true as a compass needle, went almost directly to the spot—a spot I could cover with my coat. Now for the rise. Walking up to the right of the setter and giving a glance around

as to the probable flight of the covey, I kicked the clump of grass almost at my feet. Whir, whir, whir—up and out of their hiding place buzzed a dozen or more quail. Picking out a bird to the left of the covey, I missed; covering a right-quarterer, he fell. Reloading my 12-gauge I waited a moment longer when two cock quail flushed to my right and fell to right and left barrels.

"Fetch!" Away went both dogs, a little seeking around, and each dog delivered me a bird in good style.

"Charge Ned! fetch Nero", and the third bird was retrieved. Dogs may be the best of friends around home—but under the gun are jealous—particularly in retrieving—therefore when shooting over a brace and an old bird is to be retrieved, send only one of the dogs. If both are allowed to retrieve at once there is danger of a canine dispute for honors. It has a tendency also to make a dog hard mouthed—that is grip the bird with his teeth and thus disfigure it. Game thus mangled and crushed out of shape is unsightly and spoiled.

"Hie on, both of you," and in a few minutes or so I had another covey and a large one, flushing them without firing. They settled 300 yards or more ahead scattering beautifully. I had some fine single bird shooting on this covey.

Going on towards the woods another covey was found by Nero. Ned came up and indorsed him. The pointer going at a tremendous pace suddenly caught the scent and stopped as if frozen to the ground with body and head curved to the right, one foot raised, mouth closed, lips slightly twitching, and eyes fairly starting; the setter probably eight or ten feet from him, rigid as a post, a straight line from the tip of his nose to the point of his tail; his left foot raised and the breeze toying with his feathery coat; the man with the gun ready, anticipating the flush; the brown grass, the green pine forest as a background, and the bright sunlight illuminating the whole.

Though I have seen such pictures many, many times, they never pall—there is always beauty in them—the charm is always there. Your true sportsman knows that half the sport is seeing the dogs work. It is not the bull dog that gives all the pleasure.

This covey flushed over the fence and scattered widely in the woods beyond. I did not fire, but climbing to the top rail, ordered the dogs on and sat watching them work. Presently both drew up, roared and pointed different birds. Then the shooting assumed a different phase; it was in the woods, and although the trees were fairly wide apart it necessitated some snap shooting to catch and stop the bullet like flight of these birds. No man can shoot well in covert or the open if he dwells and patters in

his aim. Under all conditions of shooting the gun should come up smoothly to the shoulder and a quick deliberate aim taken. The first sight or glance along the rib is best.

The moment I stepped down from the fence I heard my name called, and looking back in the old field, saw my friend, John Bell, the owner of the plantation, accompanied by a servant, riding toward me, his 16-gauge gun in hand.

"Howdy, John, come right down from your critter, the dogs have them one apiece."

"Howdy, Dick. Heard you shooting and have been mighty anxious to join you for an hour. Right smart birds in these old fields, haven't been shot over to any account since you were here last winter. Where is your horse? Here Julius, bring Mr. Dick's horse. You will lunch with me today, of course."

We advanced towards the dogs. Whir—"Steady Ned", bang and down pitched a bird. "That was a good shot, John, you caught him nicely between those trees." Ned had dropped to shot. Nero was holding his point. We advanced; a bird flushed to the left—my right barrel stopped his industrious wings. At the report two more rose. I missed. John killed both birds. There Nero has a bird, John, you take the shot and if two get up I will take a left quarterer."

John advanced; two birds rose going straight away and both shooters grassed their birds in fine style; picking up four more birds in the woods we returned to the field adjoining the one I had been shooting over and found a covey near an old broken down fence. Ned roared this covey and pointed them while in the act of leaping up on a large log close to the fence. We found him standing thus elevated, his head turned to the right, and Nero a few yards in the rear backing him. It was a beautiful sight, and for a full minute or so we stood looking on in silent admiration. The covey was flushed,

and were not shot at, the dogs dropped to wing Julius now appeared with our horses and we mounted and rode over to the plantation house. An hour thereafter we were enjoying a substantial lunch set forth by Aunt Tamer, an old time plantation cook.

To those who read this and know of this cooking—will join me in the regret that it is passing away. We look back upon it as a memory and think of the "joys we have tasted," and the more than warm hospitality that was ours as we sat down to the board that supported about all the good things of life.

A little advice in regard to the best time to go after quail:—

On cool, sunny days look for them on the hill sides exposed to the sun. On warm sunny days look for them in shady spots and at the edges of the swampy places. Cold, windy days, look for them along fences where the dead grass is high and in other good covers. Warm, windy days, look for them in good cover near the edge of the woods and thick bush growth. Dry, cold, dark and blustery days—stay at home and toast your shins by a good fire. Bob white will care for himself.

The gun to use on quail, I suggest a 12-gauge 26-inch barrels, one barrel a plain cylinder bore and the other a very moderate choke bore. Weight, 6½ pounds; load, 2½ to 3 drams bulk smokeless or its equivalent in dense smokeless powder; one ounce No. 7½ or 8 soft shot. This is a handy all around gun and load for upland shooting—woodcock and snipe, No. 9 and 10 shot is the proper size. If a heavier gun is preferred I would advise a 12-gauge, 28-inch barrels, weight 7½ pounds. There is today among sportsmen a change working toward the small bore guns; the 16, 20, 24 and 28 gauges. Why this tendency, and its advantages, embraces a broad subject and must be treated in another article dealing exclusively with the subject.





A BAG AT A GREEN BAY, WIS., SHOOTING CLUB

From the Game Fields

A FEW PAGES OF PICTURES



WAPAKONETA, OHIO, SPORTSMEN WHO USE THE AUTO FOR HUNTING



MESSRS. KROLL, TUTTLE, GLEASON, BILLER AND JAEGER OF GLENWOOD CITY, WIS., AFTER A DEER HUNT



SOME MONTANA BROOK TROUT—CAUGHT BY C. VAN SNYDER, MISSOULA, MONT



THE WAY THEY BRING IN THE GAME IN MONTANA



A. C. FENDER OF ABLEMAN, WIS., AND A NIGHT'S CATCH OF COON

Little Stories of Women Outers

Vacation Experiences

By MRS. O. C. GILLETTE

WHERE is the man or woman who does not look forward to his or her summer vacation and plan for weeks ahead as to where to go, what to do and what to take? I looked forward more eagerly than ever before to my vacation this year, for it was to be spent in an entirely different way. A family living near my home had decided to drive to Dakota and had asked me to accompany them as far as the Mississippi river. It would be a long ride and a tedious one, they said but they knew how I loved to live in the out door air.

Being a woman I suppose I should have hesitated, but instead of that I was very eager for the morning to come when we should start upon our journey. At last the day dawned as bright and balmy as only the days of June can, and I stood on the piazza waiting for the horses' heads to appear above the crest of the hill.

I was delighted when they drove into the yard for they had a three-seated canopy top buggy. Over each seat was a large comforter and a pillow was strapped to each side. On the back of the buggy was strapped a tent and a very small kerosene stove. Under the seats in baskets were such cooking utensils and dishes as were absolutely necessary.

We did not take any provisions except potatoes for we intended to stop every night just before dark at the town where we happened to be, pitch our tent and cook the potatoes while the man of the party went to the stores and bought what we needed for supper. From supper we usually had enough left for breakfast by frying the potatoes which were left over, warming the meat and finishing with fruit.

There were just five of us: Mr. Sunderland occupied the front seat, for, being the driver and very fleshy, he needed plenty of room; the second seat accommodated Mrs. Sunderland and son, who was about ten years old; her daughter of eleven years and I occupied the back seat. We got an early start and passed through three towns before six o'clock. We then decided to pitch our tent at the next place which was Ridgeway. The children of Ridgeway evidently thought we were gypsies for they crowded around the tent and peered in with

half frightened faces. We soon decided that we would rather proceed getting our supper and preparing our beds without their assistance. But how were we to get rid of them?

Mrs. Sunderland and I were puzzled for Mr. Sunderland had gone over town. Like Marseleen in the Sunday Record Herald, Mrs. Sunderland had an idea. She whispered her plan to Harold who immediately proceeded to carry it out by running back of the tent. When she heard him out there pretending to be busy, she stepped to the front of the tent and said, "Harold, run quick and tell Mr. Sunderland that he don't need to look around town for those children that he wanted to catch and take with him for they are all over here."

Harold went as fast as he could, but not any faster than those children. They scampered in every direction, bumping into each other in their haste to get started. When I glanced out I saw touseled heads, torn trousers and bare legs disappearing very rapidly around corners and into alleys or into their own homes. We had a hearty laugh as we related the incident to Mr. Sunderland at supper time.

We spread a white cloth on the green grass and enjoyed our evening meal as only one can after being in the out door air all day. After supper we went to the post-office and dropped postals to our anxious friends at home. Then we returned to our tent and retired early for we were tired after our day's journey.

In the morning we ate our breakfast, packed our paraphernalia and were away before the children had a chance to come and investigate the truth of our "Big Gypsy Man." So we continued on our way enjoying the scenery and passing through towns we had never seen before.

One night we had pitched our tent and were sleeping the sleep of the just when the wind began to blow and the rain to pour in torrents. Mrs. Sunderland and children were anxious to go to the hotel for the rest of the night but Mr. Sunderland and I objected very strongly. We enjoyed listening to the rain pouring on our tent, but at the same time felt alarmed for the safety of our frail home, for the wind seemed trying its best to carry it away. I soon went to sleep for I was so happy and contented that I felt sure the wind would soon go down and leave us unharmed. I had never had the same feeling of safety before during a storm, but think I

had received tonic for nervousness in abundance by living as free as the birds with no responsibility but to breathe God's blessed boon of fresh air.

The next morning was clear and bright. The rain had laid the dust and purified the atmosphere. We threw our shoulders back and started in with a new lease of life.

The next place we wished to reach was Bridgeport, which is just the other side of the Wisconsin river and has to be reached by crossing a bridge. By some one misdirecting us we got on the wrong road. And such a road! To our dismay we found we had seven miles of it to travel. On one side were hills straight and steep, rising directly from the road side on the other the Wisconsin flowed many feet below. The trees grew out from the steep bank all the way down and leaned toward the river as if anxious to touch its cooling water.

It would have been an enjoyable ride and one to be remembered with pleasure if we had not had the misfortune to meet teams with cheese going from Bridgeport to the neighboring town. The first team we passed, the man with his load of cheese was entitled to turn out on the hillside, but we with our canopy top buggy were more seriously placed, we had to turn out over the banks of the Wisconsin river. We all got out of the buggy and in fear and trembling watched the man from Bridgeport pass our load which was placed with one back wheel on the road and the other on the stump of a tree which projected over the river. As the last wheels passed the hub caught into the back wheel of our buggy and it started to go down. Mr. Sunderland with super-human effort to save his horses and rig seized the back part of the buggy and lifted it to safety. The book that I had kept notes in of the daily proceedings slipped from the seat and plunged down through the trees and into the river. After that I journeyed on ahead in the fast falling darkness with the hoot of the owl coming from over the river and the swish of the water coming from far below to warn the men with teams that a canopy buggy was coming and that they should turn out when they came to the first best place.

We reached Bridgeport without further accident but had to stay at the hotel on account of the late hour when we arrived there. We finally reached South McGregor, that little Switzerland of America with its lights gleaming out from among the hills as we approached it in the twilight.

I returned from North McGregor the next morning by train and had ample time to think over my trip. I decided it had been a profitable as well as an enjoyable one for there had been

constant change of scenery and I had become better acquainted with dear old Wisconsin.

Entertaining a Bride

By MRS. J. HOLMAN

"NOW hurry up! Be sure to dress warm and don't expect me to wait all day, either!" With these words in the dim distance we ran up the hotel stairs, and I wondered what the next day would bring forth; for I was detailed to go on a camping and fishing trip to entertain a friend of Hubby's, also his bride, rustivating for the time, neither of whom I had ever met. That year, after a siege of illness, I put off my vacation until late in the season so that my last year's clothes were good enough for roughing it, with no fashionable critics near to elevate their eyebrows at my "gypsy costume," (as one amiable dame expressed it.)

My tom-boy girl, called Bob by habit, (though Roberta was given to her in disappointment) was all enthusiasm, as this was her first outing, and was in favor of dressing up in honor of the bride, but I promptly vetoed that project; her old fishing rig was speedily donned and she was sent for the key to Dad's locker, for I intended to appropriate whatever could be used from the contents. In a pile of dirty socks and rubber boots, a disreputable old Stetson was found—just the finishing touch to my outfit. Bob took a heavy tan sweater and was quite a picture with the grotesque hood pulled over her blonde hair. A pair of long woolen socks were also taken. I wore a heavy frieze Eton suit, with short rainy-day skirt, and we both had thick, stout shoes. We drove five miles to the hotel where our prospective guests were, and although our costumes were not en regle we passed a sociable evening in the hotel parlor. At 7 sharp the canopy top, three seater, with boat-wagon tied behind, was there, and the dog, chef, never lost sight of the outfit for fear we would leave him behind.

When Mrs. Marsh appeared she was a most natty looking outer, a swell tailored suit, toque to match, silk waist and petticoat, patent leather Oxfords and above all else filmy lace hosiery on a cool September morning. With one accord three voices exclaimed "You're not dressed warm enough!" but she firmly insisted that she was, and I did not know her well enough to argue. My fair guest and I rode on the rear seat, and on level ground that boat-waggon was properly behaved; but when we got to the hills, particularly going down, the bow of the boat prodded us in the back. After one vicious jab, Mrs. Marsh sat half reversed, one eye on the

danger closely following, while I was kept busy also dodging the pesky think. But I enjoyed every moment of that day. The air was simply glorious, with just a suggestion of frost and clear, though a little breezy. A camp site was selected where a grape-vine grew over two crab-apple trees forming a natural arbor and a slight elevation of land made an admirable wind-break. The boys hunted up wood, a fire was started, and I prepared to fry steak for the first time over a camp-fire while my other half put potatoes in the ashes to roast. The first pan-full went to Chef, and he relished the extra flavor of dried leaves and ashes. The second lot was more inviting as I inverted a paste-board plate for a cover, but I refused to sample those potatoes, burned to a crisp and raw inside.

"What will you say if I serve potatoes at home cooked this way?" I asked.

"Nothing," was the laconic response, "I shall immediately apply for a divorce."

Mrs. Marsh kept waltzing round the fire to keep warm. "Why, I freeze my back while I warm my hands!" she complained to her husband who was rude enough to say, "You wouldn't listen. Put a horse-blanket on and play Indian!" He wasn't suffering any for he was sensible enough to accept some duds from Dearie and was comfortable even if the fit was faulty. The horses were turned out to graze, the boat was put in the lake and the men went fishing. Bob and I wanted to go on an exploration tour, but our guest would not leave the camp fire. In pity and desperation at last I ventured to say, "I think I could make you more comfortable if you were not too tony to use my methods!" and she was so miserable she readily listened.

"Bob produced her father's rain-coat and this was topped off with a black fur collarette. By the aid of a butcher-knife I hacked a hole in those wool socks that her French heels might have room, and these were pulled over the dainty foot-gear. Next I emptied the grub-box for a seat and hung a horse blanket from the grape-vine behind her, and then with fears as to the result tendered some spiritual consolation from the "emergency flask" (She did not leave a drop!) She now produced a paper novel from inside her jacket, and declared she could enjoy herself, that I could go roaming if I wished, and she would tend the fire. So I put a lot of brush near and we started for the woods to rob a vine of its beautiful purple

clusters that I noted in our drive. After filling our basket we strolled homeward along the shore and found where some one had camped and had discarded three large tomato cans. These I took along to Bob's amazement, and at the spring added some flat stones to the collection. When near enough to see over the wind-break, I held my breath at the comical sight. Mrs. Marsh when alone had wrapped a red and yellow horse blanket around her, and seated on the grub-box that bore the label "Quaker Oats," with those white-toed grey socks extended toward the dead fire, head against a tree, was fast asleep while, at her feet I could discern the smouldering remains of her love story. My laugh woke her; in fact, they heard it in the fishing boat on the lake and when they came ashore after my melodious calls to "Come back with the matches," the first words were, "Tell us, so we can laugh too," but she implored me not to tell.

The stones were placed in the center of fire with potatoes in their jackets in the tomato cans well balanced so they could not upset, and after the boys cleaned some black bass I fried them in minced bacon. We ate that primitive meal with an appetite and appreciation that only a day's outing can produce. When the coffee was served, all tasted and looked dubiously at each other, but said nothing. I was the last to sample the concoction and had to do some explaining to account for the peculiar flavor. Hubby had a delicate appetite resultant from the previous evening and in my wifely solicitude I had made him some beef tea. The only vessel on hand was the coffee pot and as the soap was forgotten it was impossible to get rid of the meat flavor. When ready to pull up stakes for home, the horses were missing and after some delay were located at a barnyard gate where they had followed some colts. I was in the midst of my plans for an all night camp, (teasing my nervous guest) such as draping blankets around the rig, utilizing the boat as a hammock, etc., when the vagrant nags were led out of the darkening woods. Our trip home was made with no particular features except a few additional bruises. At the hotel Mrs. Marsh thanked me for the "lovely time," and offset it by adding "but I'm so glad I'm home!"

The next week I received a letter with this astounding information: "My nose blistered and is now peeling!"





O Haunted Brook

By ROBT. PAGE LINCOLN

The bars of silver quicken in the pool,
The purple pool that tarries in the shade;
Soft rifts creep out in little spells; afraid
To pass the shallow stretching sweet and cool
Their liquid arms like flashings of a jewel
About the mossy rocks; and all the glade
Gives back the laughter that shall fade
Then rise again to greet the Dryad school.
By noonday sun and in the haloed night
When stars are bathing wrapped in dew—
Some mournful Cytherea wanders in the light
And weepeth for her fair Adonis, who
Lies on the gentle swells, that limpid bright,
Lip up the sobbings in a kiss of rue.



IN THE REDWOODS NEAR DYERVILLE

A Cylindrical Chase

By FRED A. HUNT

WITH ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR

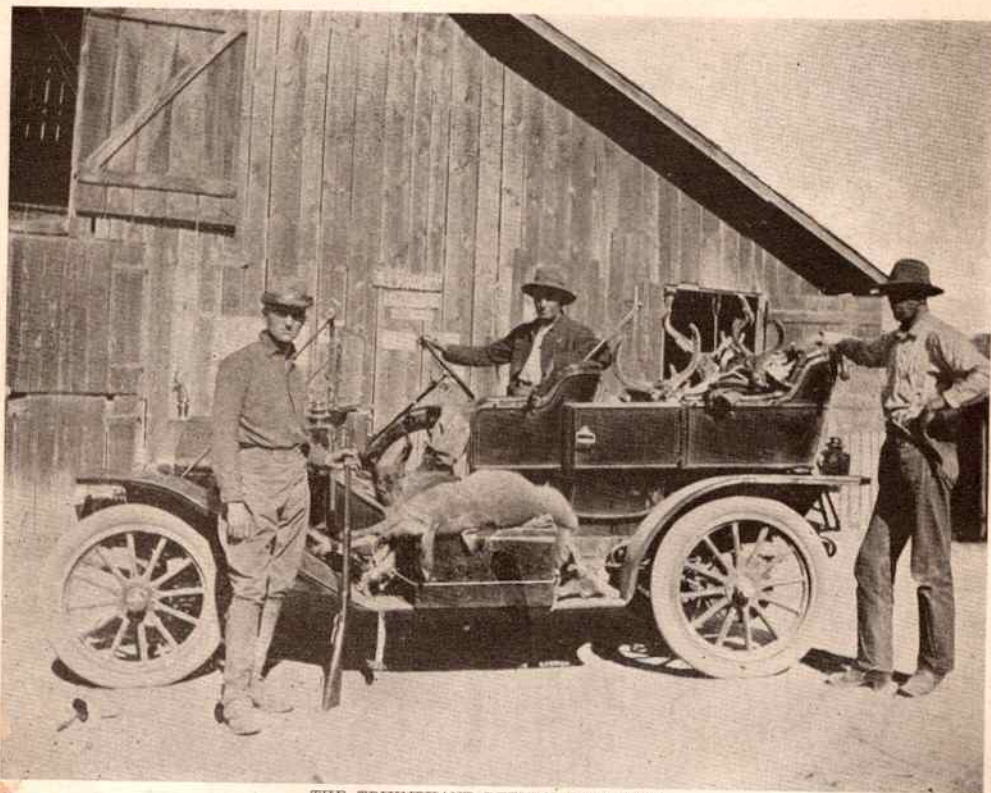


THE latest innovation in hunting methods has been promulgated by the aerophobes, who proclaim that they will hunt big game with aeroplanes. Wounded animals have from time immemorial been accustomed to be swooped down upon by buzzards; but this novelty in venery proposes to kill or maim them and then gravitate after their carcasses. It is asserted by naturalists that when a necessity arises, nature provides for the case; Dame Nature will have to furnish eyes in the tips of the ears and horns of game, that they may descry the approach of aviators from above, as well as discern, with their present optics, those who are stalking them on the earth. This prologue is germane to a trip undertaken by Lieutenant-Colonel Charles H. Bulson, Medical Director of the Veterans' Home, Napa County, California, who, with the ingenuity common to the medical profession of this advanced age, determined on reaching his happy hunting (and fishing) grounds by using an automobile—wherefore the title to this narrative. The worthy physician is no stranger to our readers and anything but a novice in fishing and hunting; so, if his prowess recounted herein, seems greater than that of the usual hunter and fisherman, it must be remembered that the doctor is an expert, that his experience has

dictated to him the favorable places for the exercise of his skill and that large areas of California are Arcadias for sportsmen. For the more complete credence of the reader, it may be annotated that the writer has visited most of the localities mentioned, and hence is acquainted with the plenitude of opportunity those places afford for an adept to fill his creel or his game-bag.

So in pursuance of his hunting innovation method the doctor stripped his automobile of all appanage save that that was purely necessary for arduous and practical service and added a few utilities for the furtherance of that purpose. And so, with the rotation of the crank, and a few honk-honks to clear the throat of the hunter's horn—in lieu of the yoicks! and tally-ho of antiquity, the devil-wagon started. Its progress was a mere matter of gasoline, patience and the inherent human capability to overcome difficulties; so nothing more will be said on that score, but allusion only made to the achievement of the objects wherefor the expedition was inaugurated and carried out.

Starting northwesterly from Cazadero, which has long had a justified reputation as a summer, fishing and hunting resort, several small hamlets were passed as well as scenery of the most attractive nature—but that, in the redwoods of California is a foregone conclusion, as was the fact that the Gualala and Van Duzen rivers were successfully whipped for trout. At Layton-

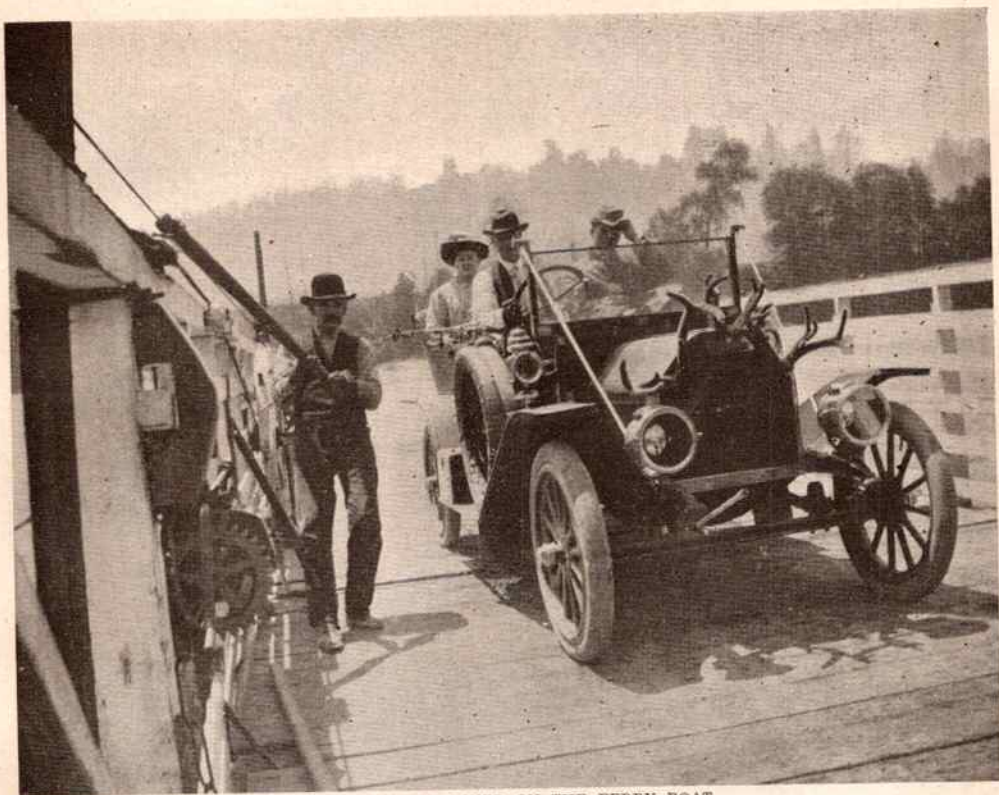


THE TRIUMPHANT RETURN TO HARRIS

ville the pilgrims encountered a coterie of packers, that were bringing loads of tan-bark, that had been stripped from the oak trees, to Laytonville preparatory to its being laden on wagons and transported to the stripping port of Westport, whence it is conveyed by steamer to San Francisco. At Westport, twenty-six miles from Laytonville, there is quite an extensive lumbering business and a large sawmill and amid whose contiguous forests, in addition to the timber obtained, is found that article of comprehensive Chinese demand, ginseng. In the river that flows by Westport there is quite respectable trout fishing, but nothing like the quantity of fish that are in the streams where the predatory human is less omnipresent.

Bridgeville and Dyerville were in turn reached and Humboldt County also; the accompanying picture shows the automobile party in a clearing amid the redwood forest; amid the trees is one whose girth marks it as one of the redwood giants (*sequoia sempervirens*) of California, and of whose size a very insufficient estimate can be made, by comparison with the pigmy humans and their automobile. From Dyerville Fort Bragg was attained and at that point fishing commenced in earnest, both salt- and fresh-water and of a variety utterly unknown to people of the East. Just above Fort Bragg is a beach,

commonly known as Squeaky Beach, because the sand of which it is composed contains an infinite number of crystalline particles, that cause the sand to "scrook" to the steps of the wayfarer. It is a magnificent beach for bathing and there the party participated in the novel and exhilarating sport of catching surf fish. Ever fish for surf fish? The initiatory process is to discard all clothing save a small portion reserved for decency's sake; to leave all your fishing paraphernalia at camp, and to equip yourselves with baskets, preferably those with a very open mesh. The surf fish come in in countless thousands on the crests of the waves and their capture is achieved by dashing into the incoming water and scooping them into the basket. Returning to the shore they are cast in heaps where they twist, jump and jiggle (as is the habit of fish everywhere when they are out of their native element) and cast their scales in the contortion. The fisher-folk then pick them up, dress themselves and return to camp laden with most delectable pabulum for the frying-pan. They only run at certain seasons of the year, like smelt (who are also gregarious in enormous schools) and the party fished for smelt with very long poles and with an enormous reel and some two hundred yards line. A number of hooks are baited at the extremity of



CROSSING THE RIVER ON THE FERRY BOAT

the line which is then thrown—lasso wise—from the cliff into the ocean, where the baits are voraciously taken by the smelts, the line is reeled in, and the silver-skinned fish transferred to the creel and again form a most appetizing dish. One of the party, for a diversion from the monotony, took a stout sealine, with a large hook, baited it with a hunk of salt pork and, after casting, waited for results. He got 'm in the shape of a large barracouda (properly barracuda—a species of fish of the pike kind [*sphyaena barrocuda*] found in the seas about the Bahamas and the West Indies. It is from six to ten feet in length). The piscator knew he'd caught something and, had he not been on the alert, the fish might have reversed the fisherman's intent. Likewise, the barracouda is a magnificent edible morsel, its flesh composed of large white flakes; but there are dozens of notable fish that play about the rocks, when the tide is coming in, in the Pacific Ocean.

One delicious esculent, a bivalve, the party caught with a novel fishing outfit—a hammer and cold chisel. All about the sea-surface of the rocks on the Mendocino and Humboldt county coasts are small holes; application of the cold chisel and hammer exhumes the rock-oyster. How did he get in the rock? That is a question for the geologist to solve; our party was only

concerned in their extrication and consumption. Another mollusk that they got a fisherman to catch for them was the abalone; they have to be pried off the face of the rock with a crowbar and with plenty of muscle applied to the crowbar. Another peculiar and unusual form of fishing they witnessed being pursued on Squeaky Beach was catching seaweed of a particular kind. This is (just like surf fish) dragged ashore and piled up on distant rocks to dry. It is then sold at a high price to Chinese who bale it and send it to China where it commands a ready sale and an exorbitant purchase-money. Large quantities are also sold in the Chinatowns of American cities.

Just below Fort Bragg the Noyo River finds its embouchure into the ocean, and not to ascend that beautifully timbered stream and fish for trout would be a crime whereof no intelligent fisherman would be guilty. The Noyo has a number of tributaries and where these come tumbling into the river there is always good trout fishing. One affluent is heavily cumbered with fallen trees, that were left by the lumbermen, but under those trunks lurk large trout. One of the party, fishing with a caddisworm, got a heavy pull from a large trout and striking, not discreetly but too zealously, landed fish and a large section of line in the branches

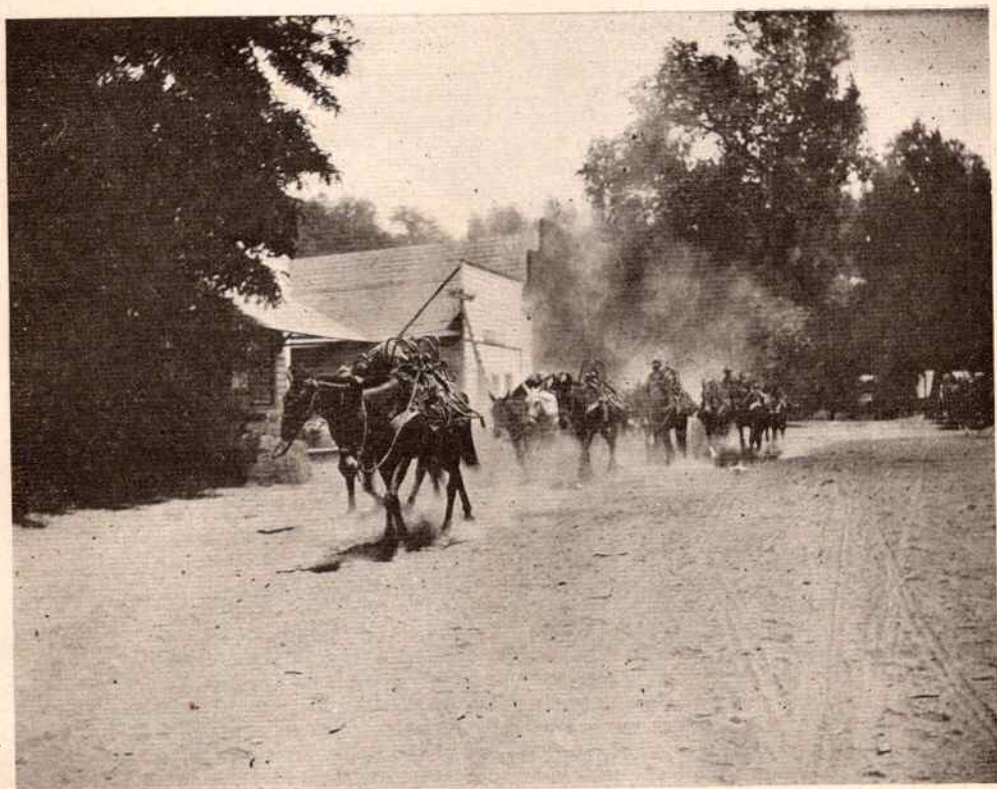


FISHING ON THE GARCIA RIVER

of an adjacent redwood; where the trout wriggled in scorn. Had he been a small one he might have hung there until he became a trout-raiser; but, being a beauty, his quasi-captor climbed the tree with infinite trouble and retrieved his fish. Casting in streams of that kind is an impossibility, although one can circumspectly drop his fly in an open space and let the passing stream overcome the fly's inertia; in narrow streams that are thickly wooded on the banks, the writer has frequently used this method to the detriment of unsuspecting trout. Pudd'n' Creek is a large tributary of the Noyo and has many riffles and petty maelstroms whence eight- and ten-inch trout can be liberally extracted. One detriment to bait-fishing for trout in these coast streams where tidewater makes its way is the voracious sun fish (a species of perch) that annoyingly appropriate the lure intended for trout; it is said some people eat sun fish; if they do they must be on the ragged edge of starvation, or have execrably poor taste or an abnormal appetite for bones. Another deterrent to the estatic enjoyment of using bait when trout fishing is an amphibian called the water dog, a newt or eft with a brown back and yellow belly, that voraciously, but almost im-

perceptibly, takes the bait and when the fisherman perceives his line getting taut and hauls it in, there is that saurian reptile on the end of his line and looking like a section of the jimjams. The shallower streams are literally infested with these water dogs; they are seven or eight inches long and become quite docile in aquariums, but they are a nuisance on the end of one's line and are responsible for much hearty profanity. Nature, however, provides a small recompense for the annoyed fisherman in the thimble-berry and wild blackberry; the former is golden yellow, apparently of the raspberry family and umbrella-shaped over the little pad whereon it grows; it is succulently delicious as its congeners in color (the wild canaries) know.

One copse in the vicinage of Fort Bragg is a shrine for humming-birds; thousands of those summits of motion congregating and breeding there. If anyone is hard hearted enough to want to kill and stuff one of these little birds—for which the writer has a special fondness and always has a red-flowered shrub, to which they are particularly addicted, in his garden—they must be killed with a blow-gun; made of a joint or two of bamboo and with a projectile made of sharpened bamboo to fit the inside diameter of



PACKING TANBARK INTO LAYTONVILLE

the blow-gun; the smallest kind of shot would knock a humming-bird to smithereens.

Ten miles above Fort Bragg is Ten-Mile; just Ten-Mile, neither creek nor river appendage; also a magnificently wooded and hill-banked trout stream, but the party ignored its attractiveness as a troutstream for the purpose of fishing near its mouth for steelhead. Steelhead are alleged to be inchoate salmon, or a link between salmon and trout. They are not quite as large as a grown salmon but have similar habits. There is a fishing station maintained for the accommodation of Waltonians; there the party went and enjoyed the luxury of catching steelhead that fight almost as hard as a muskellunge; also, they had the boniface cook one for them and realized that steelhead, as a *bonnie bouche* is superior to salmon.

Travelling northerly again the party crossed the Garcia River, and the accompanying illustration shows the doctor on the left and George D. Sanborn on the right, engaged in reverting to their common sport of fly-fishing for trout. In these streams it is merely a question of how rapacious the fisherman is; not a question of the paucity of the finny tribe. California trout are of all kinds and of all sizes; Lake Tahoe trout

are as big as small sturgeon, but these trout are of the eight- and ten-inch species and don't yield themselves to the creel without a struggle.

Again the pleasant pilgrimage was pursued and a camp established at Harris in Humboldt County, where a hunting-party penetrated the madrona, mesquite and manzanita thickets in search of deer. That they were successful the illustration manifests; on the right, affectionately carressing the automobile is the half-breed guide, (who also got a deer after a world of tugging to get the carcass back to camp); back of the auto Mr. Sanborn appears, conscious of having done his deer duty and wearing "the smile that won't come off," characteristic of all successful sportsmen.

The region where these deer were killed is an extremely broken and virgin one; what isn't hills is hollows, and all of it a jungle (chaparral in the language of the country) of varied timber and thick brush. The thicket renders it easier to shoot a deer without its taking fright before it is "plugged," but the subsequent attainment and transportation of the carcass is a profuse incentive of perspiration and profanity. And such is the perversity of deer nature that they seem to select, with diabolical cunning, the

meanest place possible whence to extricate them after they are dead. The photograph (they were taken by Colonel Bulson) discreetly omits the exhibition of sundry rents and tatters, made by the obtrusive mesquite thorns, in their garments wherewith, in addition to their "native worth and honor," the huntsmen were clad."

Northeasterly the wanderers went by way of Fortuna and the crossing over the Eel River, that finds its way into Humboldt Bay, past Eureka, the capital of Humboldt County, is artistically limned. But few of these ferries remain to delight the eye and gladden the pocket of the ferryman; they are run by the stream's current and operated by pulleys attached to the rail of the ferry-boat. Eel River is also an

excellent stream for fishermen and there the festive and succulent catfish can be found in profusion. As indicative of the difference in taste—*chacun a son gout*, the Frenchman sagely remarks—the author has luxuriously partaken of bullhead breakfasts at the inns on the Wissahickon (most ornate of streams); in California the sole use they put a bullhead to is to skin it and use it for bait; to eat a bullhead they deem as extravagant an outrage on good taste, as an orthodox Jew does to eat pork tenderloin. So they esteem fishing for bullhead an idiotic waste of time, on a par, perhaps, with intentionally catching water dogs, although the latter have an extensive, and financially profitable, sale in New York City.

Tempora mutantur et nos mutamur in illis.

Preparing Jerked Venison

"Of all the hunters that go out after deer nowadays," said an old timer, "I don't believe one in a dozen knows what jerked venison is; or if he does know that he doesn't know how to go about preparing that exceedingly toothsome provision. Any one who has camped on the deer trail and failed to include jerked venison in his camp fare or didn't fetch home with him a liberal supply of it has missed one of the most appetizing recollections of the woods. This is the way to go about jerking your venison:

"Cut the choicest of the meat into strips ten inches long and two inches square. Sprinkle them quite liberally with salt, but not enough to make them bitter. Let the salt work on them for a couple of hours. While it is doing it you go and put down two logs a foot or so in diameter side by side and about the same distance apart. Between the logs make a fire of dry hemlock bark.

"Hemlock, or a relative of hemlock, is always apt to be found in deer hunting regions, and I never go into camp without taking pains to gather up a lot of hemlock bark for use. It is the best material for the purpose because it will make a fire of hot coals without running to blaze or smoke. Birch bark would be ideal for the purpose, but it is all blaze with birch bark. Hickory wood couldn't be beat for jerking venison, but hickory wood would smoke the meat, and jerked venison isn't smoked venison, as a good many folks suppose it is, not by a long shot.

"Having got your bed of hemlock bark coals in fine shape and having driven at the inside edge of the ends of each log a crotched stick long enough after it is securely driven to have the crotch perhaps a foot above the logs and have extended from crotch to crotch in these

sticks two poles that are thus suspended above the fire, cut as many half inch hardwood sticks as you need, long enough to reach across from one pole to another and rest securely on them. On these sticks string your strips of deer meat by thrusting them through the meat near one end of the strips, the sticks being sharpened at one end to facilitate that operation.

"This will leave the strips hanging from their sticks much as the candles used to hang from theirs in the old fashioned moulds, if any hunter of this generation is happy enough to have recollections of the days when we made our own candles. Place the sticks with their pendent meat over the coals. Turn the concave sides of lengths of hemlock bark over the top of the sticks. This will keep in the steam that will presently begin to rise from the meat, as the coals get their gradual but effective work in on it. Keep the fire down there between the logs so it won't make too rapid a heat, for if it does the juice will ooze out of the meat and be lost, and that would detract from the excellence of the finished product.

"If during the process of jerking your venison the meat is taken off the coals before it is done it will be soft and flabby. If it is hard when taken off it will be overdone. In either case your jerked venison might much better have remained unjerked, for it will be a failure. To prevent either of these catastrophes the meat should be tested frequently by pushing a sharp knife blade or other convenient probe into and through the strips. The moment it requires more than ordinary force to push the probe through, your venison is thoroughly and properly jerked. Then shove the coals from under the strips and let them cool with the dying embers.

—*New York Sun.*



WITH BAIT AND FLY

EDITED BY O. W. SMITH

This department is conducted with the express purpose of aiding fishermen, and to help them aid one another. To that end communications are invited upon subjects pertinent to implements and methods of the craft. Any disciple of Sir Isaac will be given an opportunity to express his views, providing he uses the language of a sportsman, and *does not indulge in personalities*. It is understood that each article is published upon its own merits, and the publication of an article does not signify that the editor is in accord with the views expressed.



All About Bait Casting

PART II

THE ROD—PROPER WEIGHT AND LENGTH

Perhaps no two anglers will ever agree as to the proper weight and length of a rod, therefore, we enter upon this discussion with much fear and trembling. Some time ago a man writing from a western state asked, "How heavy a bait rod would you advise?" and added, "I weigh 180 pounds." There seems to be a general impression that a heavy man will require a heavy rod and a light-weight a rod correspondingly light, but such is not the case; the weight of the rod depends upon the weight of the fish to be caught and the skill of the angler. Writing upon this subject in "The Book of The Black Bass", Henshall says: "A novice will be sometimes told by theoretical anglers that he must procure a rod which accords with his size, strength and general build; that a rod which suits one angler will be too long, too short, too heavy, or too light for another. Now this is all gammon; the rod must be made to suit the fish, and the mode of fishing, without any reference to the angler himself." When Dr. Henshall began his well known crusade in favor of the black bass anglers still living laughed at his "Henshall rod" which was eight feet and six inches long; but today those same anglers are advocating a much shorter rod, sixty inches long and less. Here is an important point to bear in mind, the Henshall rod was produced as a live bait caster, while the short rod is the result of the more recent artificial bait craze. I call it a "craze" not because I am prejudiced against artificial bait casting but because the more enthusiastic devotees of the various artificial lures insist that it is more sportsmanlike to use them than it is to use live bait of any description; however, we

will go into that matter more at length later on in this series.

The short bait rod is the result of the desire to make long casts and to secure accuracy. In the Middle West, where this type of rod was produced owing to angling conditions, a school arose which insisted that the extreme length of a casting rod was six feet six inches, and manifested little patience with those anglers who did not agree with them. Then came the devotees of the "Kalamazoo," a rod less than five feet long, and almost without "action" though it was a good "caster." Today at tournaments where long distance casting is a feature the rods average from five and a fourth to five and a half feet long, and, with such rods marvelous casts are made. It seems to me that one might fasten guides to a shotgun wiper and make creditable casts with it, but distance and accuracy are not everything, we must also think of landing the fish. I have experimented considerably with the short rod and I think there are hundreds of anglers who will agree with me when I say that they are very unsatisfactory when it comes to playing and landing a fish. I know that with my six-foot-six rod I can not cast as far as I might with a five foot rod, but when I have hooked a bass I have a rod to help me conquer the fish, need not fight him with the reel alone. That angler is foolish indeed who sacrifices "action" to distance. Upon the other hand if the rod be too long, the overhead cast, the cast one uses most often when fishing from a boat, will become exceedingly difficult. I am open to conviction, but until I receive more light I must declare myself in favor of a rod six, or six feet six inches long. Right here let me make a

confession: I have in my heart a very warm place for the original Henshall, eight feet three inches long.

The weight of the rod is in direct ratio to the length, caliber and material. The weight of split bamboo is given by an authority as an ounce to a foot, it therefore follows that a solid wood rod would weigh slightly more; of course the steel rod would be heavier still. There lies open before me the catalog of a well-known manufacturer who gives the weight of his six-foot bamboo rod as six and a half ounces, while his wood rods run from seven to eight ounces for the same length. It is possible, by using light reel bands instead of metal reel seat and light sumac hand grasps to materially reduce the weight of the rod, but further reduction must be made in the rod itself. To reduce the diameter of the rod beyond a certain point is not the part of wisdom, for to do so is to produce a toy and not a weapon. It is true that casting the artificial bait with a heavy rod tires one in a very short time, and even a six ounce rod will grow very heavy before the gathering shadows indicate that the time for quitting has arrived. Let me say that in my opinion the longer rod, though it weigh two or three ounces more, will not fatigue a man so soon as the short stiff implement so much in vogue at the present time; the action of the former is easier, more natural. I doubt if it is ever wise to use a rod in bait casting for bass that weighs over eight ounces, that is a heavy rod. However, a rod that weighs eight ounces, if the action be perfect, will tire the angler less than the one that weighs only six and does not balance.

Let me quote Henshall once more before I leave this part of my subject. "The rod from which my original description of the 'Coming Black Bass Rod' was taken was eight feet and three inches long, in three joints; the first joint or butt was composed of white ash, and the second joint and tip of lancewood; it weighed just eight ounces; it was finely balanced, with a true bend from butt piece to tip; with it I killed hundreds of black bass, weighing from two to six pounds, and pike from five to fifteen pounds. I used it many seasons, and failed to see where it could be improved. I oftentimes cast out my entire line of fifty yards when casting with the wind. I felt justly proud of the merits of the rod, for I made it myself."

NUMBER OF JOINTS

Again referring to the catalog before mentioned I find listed rods with one, two and three joints. Obviously the most perfect rod so far as action and weight is concerned will be the one-piece rod, but it is unhandy; so unhandy in fact that that one point out-weighs all points in its favor. I would not accept a one-piece rod as a gift unless you also gave me a lake with a fence

around it, and I would want the fence well back from the shore too. The one-piece rod eliminated the discussion narrows down to the two and three-piece rods. I have never used a rod with two joints so I cannot speak from experience, but it appears to me that a ferrule placed in the middle, where the strain must be the most severe, can but weaken a rod. However a great many reputable manufacturers build rods of that type, manufacturers whose names are passports for quality, nevertheless. I do not invest in them. For beauty, convenience and utility it seems to me that the three-piece rod, as it is built today, is almost perfection. In three joints the six-foot six rod becomes a suit-case rod, convenient to pack, and in a well made tool the action is almost perfect. I would say to the novice, whether investing in an expensive split bamboo or buying a moderate priced steel, by all means secure the rod in three joints.

ROD MOUNTINGS

This division of our subject must be again divided, and as follows: Ferrules, handgrasp, guides and tips. In order that we may help the tyro we are going to run the risk of proving tedious to the well informed and experienced angler.

The material from which the best ferrules are made is of course German silver, though all German silver is not of the same quality as any rod maker will inform you. In addition to German silver we find nickel and even brass used on cheap rods. I much doubt the wisdom of investing in a rod mounted with nickel plated ferrules, though such a rod may render good and efficient service for a time. I have in my possession a rod which I bought when a boy, and the nickel plated ferrules are brassy now but still in good condition though unsightly; I much doubt if the average German silver ferrule would have endured what those cheap nickel-plated ones have passed through. Having said that, let me also say that while I have seen nickeled ferrules break I have seen but one German silver play traitor, and in that case it was a fault in manufacture. German silver is stronger, less reflective and never becomes unsightly.

With no desire to excite the animosities of certain rodsters, I must say that I believe the baneful effect of bright ferrules is much overrated. Having experimented at length with both bright and oxidized ferrules I have come to the conclusion that it makes little difference which is used. Perhaps there are times when the flashing of bright mountings may frighten super-sensitive fish, such as trout, but that such ferrules will spoil a day's fishing I do not for a moment believe. If you have a fancy for bright mountings do not let the fear of frightening the

fish deter you from indulging your fancy, though you will find that the oxidized mountings have a beauty all their own.

As to how a ferrule should be made, I refer the reader to that most excellent work by Mr. Perry D. Frazier, "Rodmaking For Beginners." In the brief space allotted me here I can but touch upon a few important points. Perhaps the best way to get at the matter is to refer to "The Amateur Rod Maker's Hand Book," an informational catalog gotten out by a well known house. We note that the "serrated" ferrules cost considerable more and naturally we ask why a serrated ferrule is more valuable than one with a plain end. In a word, the end of the ferrule which is fastened to the wood is cut into saw-teeth in order that it may be fastened more securely to the rod joint. Some manufacturers "split" the base of ferrules for the same purpose, but all else being equal I prefer the former. Another word we find in our catalog is "welted," meaning that the open end of the outside (female) ferrule is strengthened with an extra band of metal; when the welt is decorated with cord or bead work it adds greatly to the appearance of the rod. "Shouldered," (called by some "capped") meaning that the base or binding end of ferrule is enlarged to facilitate binding and prevent slipping. Note in passing, a good well mounted ferrule is never "pinned." If a rod has "waterproofed" ferrules so much the better, but when well mounted with waterproof cement there is little danger of water reaching the wood.

The hand grasp of a bait rod may be made from a great variety of materials—solid wood, cord wound, veneered cork, rubber, ring cork, etc., etc.; but there is but one best material, and that is the last mentioned,—ring cork covered. Better a solid wood butt than one veneered with cork, the cork soaks off in time, then your rod is ruined. The so called "solid cork" or ringed cork is composed of a number of cork rings or washers slipped over a core of solid wood and glued in place, such a hand grasp is durable, light and satisfactory. I do not like the various corrugated handgrasps on the market as they are harsh to the hand and produce blisters, which is also true of many of the cord wound butts. The butt wound with cane is smooth and grateful to the hand, but when the winding

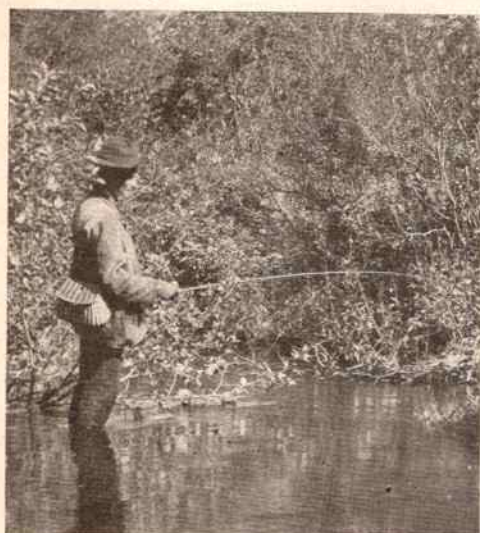
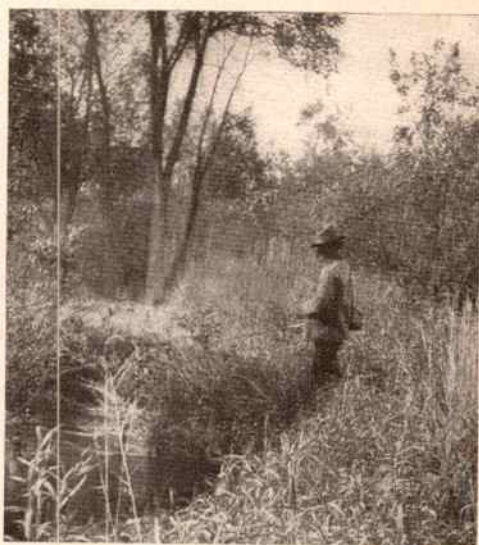
breaks you are due for a trip to the repair shop. As to the shape of the hand grasp, that, of course, is simply a matter of personal opinion; I prefer the "swelled" shape, for grace of line and severe beauty it can not be equaled and it "feels" good in the hand; however, many good rodsters like the "shaped" handgrasp and the are welcome to their choice. In the matter of "double" or "single" handgrasp the angler must choose for himself. There is no doubt that the double handgrasp adds slightly to the weight of the rod and impairs its action somewhat, and to my mind is not so symmetrical in shape. Upon the other hand the advocates of the double handgrasp say, and with reason, that it affords a better grip and the casting hand is not so liable to become cramped. My advice would be, try both rods and use the one you like the best.

The reel seat should be made of German silver to preserve unities and for the sake of durability. As to the shape, little need be said, you may choose between one with plain band and with straight hood, and one provided with welted band and taper hood. I like the latter, the welted band is stronger and has a more finished appearance while the taper hood adds to the beauty of the rod and does not detract from its strength. Of course the last statement would not be true if the taper hood was placed on the rod to cover faulty workmanship, but we supposedly are not dealing with poorly made rods. See that the reel band is provided with some dependable locking device, for in the full arm movements of bait casting the reel is liable to become loosened and then disaster is your portion.

One manufacturer, whose artistic catalog lies on the desk before me, furnishes his bait rods fitted with a "finger pull" or "finger hook," the necessity for which I never could clearly see. It cramps the finger, is in the way, is liable to be broken, and in nowise adds to the appearance of the rod. There was a time when most of the short bait-casting rods were provided with the little contrivance, but today some good manufacturers are not placing them on their rods except by special order.

[In the March Outer's Book we will talk of guides and tip and take up the question of the bait casting reel].

"I would rather sit on a pumpkin and have it all to myself than be crowded on a velvet cushion. I would rather ride on the earth in an ox cart, with a free circulation, than go to heaven in the fancy car of an excursion train and breathe a malaria all the way."—*Thoreau*.



ALL ON A SUMMER'S DAY

Some Familiar Fish

No. 13. THE BLUECAT (*Ictalurus furcatus*) AND THE CHANNEL CAT (*Ictalurus punctatus*)

AS to whether or not a catfish is a game fish I will leave the reader to determine. That he is a fighter possessed of all the stubborn courage and tenacity of a bull dog every angler who has happened to hook one when angling for black bass is willing to admit. Once upon a time I hooked one of the ugly gentlemen, and after playing him for half an hour he did not seem as tired as I; had not the line fortunately parted, perhaps I would have been playing him yet. That was a heavy fish but let me say that a three-pound catfish on a nine-ounce rod will serve to occupy considerable time when the bass are not biting, if playing the fish is not sport then it is a mighty good imitation of it.

The family to which the catfish belong (*Siluridae*) is a large one, there are about one hundred genera known to science and nearly a thousand species, most of which are fresh-water fish though there are a few salt-water representatives, mostly tropical. The fish is very plentiful in tropical countries, fairly swarming in the Amazon and its tributaries, as well as in Africa. In the United States and Mexico, Jordan and Evermann tell us there are about thirty-four species, only a dozen of which are of much importance; of the thirty-four species all but four are found to the Atlantic, Mississippi Valley and Gulf States. Originally no catfish were found upon the Pacific coast but two species have been planted in the Sacramento and San Joaquin rivers where they have multiplied until the rivers are "alive with them," to quote from a recent letter.

I am often asked to tell the difference between a bull-head and a catfish. Now it is impossible to lay down any hard and fast rule by which an angler may tell a horned "pout" from a catfish, for, to quote from "American Food and Game Fishes," "The lack of connection between the supraoccipital and the interspinal buckler is the only characteristic by which this species (the bullheads) can be separated from *Ictalurus*." Oftimes we hear anglers say that bullheads have round tails and catfish forked, now while it is true that most bullheads are possessed of truncate caudal fins, there is the Great Lakes catfish, a large fish of not a little importance, and it has a forked caudal fin. The white cat, called also Potomac cat, a bullhead found from Delaware River to Texas, common in the Atlantic Coast streams and ranking in importance with the Great Lakes catfish, is also possessed of a forked tail. The other bullheads

liable to be met with so far as I know, have square or truncate caudal fins. From the above it will readily be seen what a difficult subject we have to deal with and the average angler will have to be content to catch and eat the fish without satisfying himself as to whether he is catching and eating bullheads or catfish. Perhaps some day some scientist will discover an easy method of determining the identity of the members of the two families, but till then there must be a great deal of doubt and argumentation. But when it comes to the question of eating it makes little difference whether the fish be an *Ictalurus* or an *Ameriurus*, for, as the darkey says:

"Don't talk to me o' bacon fat,
Or taters, coon or possum;
Fo' when I'se hooked a yeller cat,
I'se got a meal ta boss 'em."

The two cats we have elected to talk about in this paper—blue cat, called also Mississippi cat; and channel cat, called also spotted cat—while if not deserving the name of game fish are deserving the notice of fishermen. The first mentioned is the largest and of the most importance from a commercial standpoint. The largest specimen on record weighed 150 pounds and was caught in the Mississippi at St. Louis; however it is very doubtful if many are caught today weighing over thirty pounds. A twenty-pound catfish is a large one. The average length of the fish is from two to three feet though individuals have been taken measuring five feet from top to tip. As to appearance let Punch's description stand:

"The catfish is a hideous beast,
A bottom-feeder that doth feast
Upon unholy bait.

His face is broad, and flat, and glum;
He's like some monstrous miller's thumb;
He's bearded like the pard.
Beholding him the grayling flee,
The trout take refuge in the sea,
The gudgeons go on guard."

The channel cat is in appearance very like blue cat, indeed one is often mistaken for the other, though the latter generally, if not always, has the sides decorated with small irregular black spots. It is a trimmer built fish than the blue cat, more gamey if one may be indulged to the extent of applying that time honored term

to a catfish. Whatever may be the range of the two fish, and it has not been clearly made out, the blue cat prefers the sluggish rivers while the spotted cat inhabits more rapid streams. The latter fish is of small size, those I have caught never weighing over a pound and a half or two pounds, though Jordan and Evermann give the maximum weight as thirty pounds. Those I have caught have behaved well upon the hook, fighting with a surprising rapidity of movement, dashing through the water in a bass-like manner. I must say that I enjoyed the sport.

As to the habits of the fish little need be said. The spawning season is in the spring, in the South, beginning early in April. The fish is largely influenced by the temperature of the water, ascending the rivers as the temperature rises and descending as it falls. When the Mississippi River overflows its banks the catfish "take to the woods" and the fishermen follow. Lines are fastened to outreaching branches of trees, the hooks being baited with almost any

considerable sport in gaffing a twenty-pound catfish this writer is ready to assert, for he speaks with a memory of blistered hands and drenched clothing constantly before him. When lines are set they should be visited every morning and during the night if possible for there are other animals beside man that have discovered that the esculent flesh of the cat is very good eating and are quick to take advantage of a hooked fish's helpless position: namely mud-turtles and gar pike. Then too, lifting the lines by the half light of the moon while the shadows play at hide and go seek across the surface of the water adds romance to the sport. Another method of catfishing much practiced by the colored brothers of the South is known as "juggin' fer cat," and in brief is as follows: tightly corked jugs with baited lines attached to the handles are thrown overboard and allowed to float down stream with the current, the fisherman following them in his boat. When a jug begins to act in an eccentric manner, to leave its position in the line of jugs and dart off on a tangent, the fisherman knows that a cat or gar fish is seeking an aerial journey and starts in pursuit. To properly appreciate the sport you should be accompanied by an excitable colored man, the stories he will narrate while the moon hangs low in the west will add variety to an otherwise pleasureable experience. The dictum of George Washington Brown, "Fo' de Lawd Massa, dar an nothin' like juggin' fer cat," will be agreed to if you essay the sport with a southern born negro as guide and boatman.

As to the proper tools for a rod and reel fisherman a tried and true bait casting rig is all right, but remember, it must be tried and true, for an evening's fishing for cat will subject rod, reel and line to tests undreamed of in ordinary bass fishing. When a cat "sounds" he will have line or something will break. For the ordinary fish—the twenty-pound and up fish—nothing but a strong, well made gaff will fill the bill. I once hooked a twenty-one-pound cat on a seven-ounce rod and after a long, severe battle successfully landed him: if I told you how long it took me to vanquish that fish you would accuse me of seeking membership in the Ananias Club. Another thing, when unhooking a cat beware of the sharp side fins, a single prod has been known to cause a Methodist to backslide. The best time to fish is of course in the evenings and as long as you care to sit up; but when rain roils the water you may angle all day, for "flood time is cat time." Now I have not related one half that is known of catfish and fishing for cat but I have suggested I think that in cat fishing we have an undeveloped sport, yes, *sport*.



A MISSISSIPPI CATFISH—FROM AN OLD PRINT

kind of flesh, though live bait is preferred, such as minnows, crawfish, frogs, etc. In the South the best live bait is small shad while frogs lead in the North. Various methods are used for setting lines, sometimes a rope is stretched across a river well beneath the surface and fastened to stakes or trees upon either bank, to this rope at regular intervals short pendant lines are attached; when the fisherman desires to examine his hooks the rope is raised and passed over the boat, then, hand over hand the boat is drawn across the river. That there is

A Little Talk on Casting the Fly

By HOWARD JAMES

I THINK there would be more fly-casters if the art of casting the fly were not made to appear more difficult than it really is. Not that fly-casters create these difficulties, but because the would-be learner fails to grasp one or two fundamental points which it is the purpose of this article to clear up. During the past years I have had many pupils, generally on my lawn. Let me describe a lesson.

PISCATOR: Good morning, Mr. Coulton, where from now?

PUPIL: Just home from a trip up north—along the line from Hermansville to Watersmeet.

PISCATOR: Some nice trout streams up that way; did you try any of them?

PUPIL: The only chance I had was at Basswood, where I waited three hours. I didn't have my waders and couldn't reach far enough out into the stream. Besides, I didn't know where to find any worms.

PISCATOR: Too bad you didn't have a few flies in your pocket. Did you see any trout jumping?

PUPIL: Yes, lots of them, twenty or thirty feet from the shore. If I only knew how to cast a fly I could have got a basket full just walking along the shore.

PISCATOR: Did you ever try to cast a fly?

PUPIL: Yes, over and over again, but I can't get the plagued thing out more than ten feet, unless I put on a sinker, and that scares the trout. I wish you would show me how to do it.

PISCATOR: All right! Happy to do so. Come to my house at five o'clock this afternoon, and I'll bet you a dollar against doughnuts that in half an hour you will be able to put out at least twenty feet of line clean and straight.

PUPIL: That'll be fine. I'll come, sure.

* * * * *

At five o'clock the Piscator has selected one of his light fly-rods with reel and line and an old six feet leader with a bit of match on the end of it. On the lawn is a folded newspaper held by a stone on each of its four corners. There is a ten-foot bean pole to measure the distance. The Pupil is stationed twenty feet from the paper.—

PISCATOR: Now just notice how I do everything, for even in little matters there is a right way and a wrong way. Notice that in putting my rod together, I first joint the tip and second joint, and then add the butt. Then notice that the reel is put on in such a way that the handle points to the right, so that in casting it will not come in contact with the clothes. Now run the line through the guides and attach the leader by this knot, which you can pull out when you are through. Now take the rod and try to hit that paper with the match.

* * * * *

The Pupil, who is a good bait caster, throws off the click of the reel, makes a cast and gets out about six feet of line.

PUPIL (in despair): There! I told you so! There isn't any weight to carry it out.

PISCATOR: Now we are coming down to the fundamental difference between fly-casting and bait casting. In the latter, the momentum is gained with the heavy bait and an added piece of lead—in the former we depend upon the weight of the line and the spring of the rod. Do you notice how big this line is?

PUPIL: Yes, it is three times as heavy as my bass line.

PISCATOR: It is an E line—strong enough to hold a "musky," but when skillfully thrown will drop on the water as lightly as your finer line, and heavy enough to travel almost in the teeth of a gale. I notice you tried to cast from the reel. That is wrong, the line isn't heavy enough for that.

PUPIL: I begin to understand. Now let me see you do it.

PISCATOR: Now notice that I pull out three or four yards of the line from the reel, letting it lie on the grass at my feet. In that way the line will slip freely through the guides. Now I jerk the rod backwards and the line follows it. Imagine that you are waving a whip with a long lash through the air, backwards and forwards. When it goes forwards you can see it, but when it is back of you you can only feel it. Notice that I do not drop the tip of my rod much beyond the perpendicular so as to keep the line in the air. Now when it goes forward I let the line drop. That is a cast.

PUPIL: That looks easy enough,—but you haven't got out to your mark yet.

PISCATOR: Now notice—with my left hand I pull some more line off the reel, to the full length of my arm, and hold it lightly between my thumb and finger. Now I bring my rod to an angle of about forty-five degrees, and jerk the line as though I wanted to hit the top of that tree behind us. As the line flies back it carries with it the line I am holding—then forward again, and I am almost to the mark—once more the same process and the match taps the paper. It isn't much of a cast—only twenty feet—but when you can do that right, all the rest is only a matter of practice and in a month or two it will extend to forty feet or more. Now try it yourself and let me criticise.

PUPIL: I begin to see the point. It's entirely different from bait casting. I have some hopes.

PISCATOR: Remember, that all the work is done by the wrist and the rod and a little of the forearm. Keep your elbow close to your body. In actual fishing, you may not always do this, but it is good form and the right way to begin. You are too gentle with that back cast. Lift it off the water (or the grass) with a snappy jerk, put more vim into it! When the line is straightened out behind you, you have the spring of the rod to help you.

PUPIL: Hello! my line has caught in the grass behind me. I must go back and loosen it.

PISCATOR: That is because you carried your rod too far back, and is the one fault that you must learn to avoid. Notice that in grasping the rod with my four fingers my thumb is extended up the grip. Now with your elbow close to your ribs, lift the rod till your thumb points exactly to the zenith. Take that for your guide in the back cast. The bend of the rod will throw the line a little farther down, but not enough to impair the forward cast. Now try again—never mind the forward cast—jerk your line back as though you wanted to hit a star. It is an axiom among experts that a fly-caster is known by the height of his cast.

PUPIL: I'm catching on—what next?

PISCATOR: Now count *one* and jerk your line back—when your thumb is perpendicular

count *two*, and when you make the forward cast count *three*. If you hear the line snap behind you, you are counting too fast and would probably lose your fly—so take it slower—bring your rod forward till your thumb is at an angle of forty-five degrees. Your line and fly are flying through the air towards their mark—now gently lift the point of your rod a little, and the leader will go forward and allow your fly to strike the water first.

PUPIL: I see—there—I've got that out all right. Now I'll pull out some more line. Hullo—that's easy enough when you know how. Hurrah! I've hit the paper and you've won the doughnuts.

PISCATOR: There's not much more that any one can teach you. The rest will come as the need presents itself. Practice till you can get out thirty feet of line and then go on the stream in company with some good fly caster and watch him. I forgot to tell you that in making the back cast the wrist should be thrown a little to the right, to avoid the possibility of contact with your face. This may be varied by casting over the left shoulder. Then there is the side cast, the line going horizontally a few feet above the ground instead of in the air. This is often convenient when the wind is blowing, or to cast under over-hanging limbs. It is a good plan to walk along, keeping your fly in the air all the time, and gradually lengthening the line.

PUPIL: I suppose my bait rod won't answer for this kind of fishing?

PISCATOR: No, it is too stiff, too short and too heavy. You will need a regular fly-rod—nine to ten feet long—five to six ounces in weight. A cheap single click reel; a waterproof line, E or F in size, and gut leaders six feet long. The rod you have been using today is nine feet six inches long and weighs five ounces. The butt joint is pretty stiff. Almost every angler has his peculiar liking in the way of a rod. I like plenty of back-bone in mine. Go to a good dealer and he will advise you.

PUPIL: I'll get an outfit and practice in my back-yard, and the next trip to Iron Mountain or Basswood, I'll be ready for the fray. No more worms for me.

Her Regret

She went a-fishing one fine day.
She said: "'Tis slow, I vow;
I never get a chance to say,
'The line is busy now!'"

—*Milwaukee Sentinel*.



THE FISH WE DO NOT LAND.

Why is it that the fates have planned
To always thwart the angler's wish?
What sage or seer can understand
Why no man ever quite may land
The biggest and the proudest fish?
Perhaps the one that angerily
Escapes might not in truth be thought
To outweigh all the rest or be
Considered Wonderful if he
Could sometime, for a chance be caught.

S.E. KISER

Position of the Reel

By "PETER"

"IN rigging the cast with the minnow, the reel must be placed underneath the rod, on a line with the guides. Many anglers use the reel on top, but this is essentially wrong. The weight of the reel naturally takes it under the rod, where it balances better and enables the rod to be held more steadily; the strain of the line also falls upon the guides, which insures a more perfect working of the rod. Both click and multiplying reels should always be so used, and it will be found far the best way when one becomes accustomed to the plan."—Henshall's Book of the Black Bass, page 393, 1904 edition.

Some years ago, Mr. R. B. Marston, editor of the well known English Magazine, "Fishing Gazette," enquired of Mr. C. P. Levison, of Brooklyn, New York, for information regarding our methods of free reel casting, an art not widely practiced over the water. Mr. Levison in his reply stated that he always places the reel upon the upper side of the rod, handle to the left, the line going from the under part of the spool direct to the first guide. Thus, when the rod is turned over—in playing a fish—the reel handle is to the right. So far Mr. Levison agrees with Henshall, as quoted above. But Mr. Levison goes on to say that in tournament work he usually placed the reel upon the upper side of the rod, handle to the right, the line going from the upper part of the spool to first guide. Necessarily he must use it in that position when casting. Why the first position for fishing and the second for tournament work? Of what value is tournament work if the methods there used may not be applied to actual fishing?

For some years I have made a study of bait casting and bait casters and have come to the conclusion that a majority—a great majority—

use the reel upon the upper side of the rod not only in display work but also in actual angling. I have watched some of our well-known bait casters when engaged in actual bass fishing, when they were more interested in capturing fish than they were in correct handling of rod and reel, and almost invariably they cast with the reel on the upper side of the rod and kept it so while playing the fish. A few anglers I have met have dropped the reel under the rod when fish have struck and have played the capture left-handed. Manifestly an awkward method. Some few of my acquaintances, past masters of the art of casting from the reel, deliver the bait or lure in such a manner that when the rod is fully extended in front the end plates of the reel are parallel with the water, the idea being that when the reel is in that position the gear offers less resistance than when in any other position.

Bait casting from the reel originated in the Middle West, and so far as I know, in that section of the country the preferred position for the reel is on top of the rod, Dr. Henshall to the contrary notwithstanding. The argument of the casters who so use the reel is that you can let the reel run with plates parallel to the water, your right hand, your "handy hand," is right at the reel; in case of a strike you have only to hook the fish, then your left hand grasps the rod handle and your right is free to crank the reel. Again, in case a snarl forms upon the reel, it is right where it should be, on top of the rod and handy to get at, the reel all the time under control of the thumb. To which the advocates reply, pointing to Dr. Henshall's statement quoted in opening, "Your method is unnatural." Is it?

The Fins of a Fish

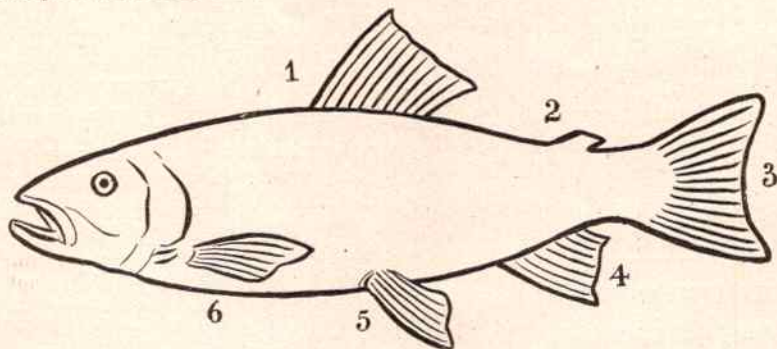
RECENTLY several letters have come to the desk of the editor asking him to name the various fins of a fish, so he has exercised his artistic skill (see the drawing) in order to answer several correspondents at one sitting. Be it said, that if anglers would learn the names of the various fins of a fish, and always call fins

by their right names when writing for information, their letters would be more intelligible and the editor would not be compelled to so frequently call upon his imagination. In the near future I hope to secure an article for this department telling how to describe and measure a fish. An angler need not be possessed of the nomen-

clature of an Agassiz in order to describe a fish so clearly that a scientist would know at once the name of the fish described.

A glance at the outline drawing, which is supposed to represent a trout, will serve to call

present in trout; (3) the caudal fin, ordinarily called tail; (4) the anal fin, just back of the anus. Now we come to the paired fins, working front,—(5) the ventral fins; (6) the pectoral fins. Of course no fisherman need be told that



to mind the several fins of that darling of the cold-water brooks. Beginning at the back,—(1) we have the dorsal fin, sometimes, as in the black bass, with spiny rays; (2) the adipose or fatty fin, absent in such fish as bass, but always

the shape and size of these fins vary in the various species of fish, and any one who has paid any attention to the matter has discovered that they are often important diagnostic features, if I may be allowed to use a familiar word.

Answers to Correspondents

ANGLER'S CALENDAR

FEBRUARY

"And let us buy for the days of spring
While yet the north winds blow!
For half the joy of the trip, my boy,
Is getting your traps to go."
—*"The Tent Dwellers."*

Now, while the north wind howls about the house dashing the white snow against the window pane with vengeful spite, our plans are maturing for the spring campaign. We return from the office at night in the face of a bitter gale that causes us to turn up our wide collars and stamp along in order to keep the blood circulating; and yet there is an indefinable something in the cold atmosphere that hints of spring. Perhaps it is all the result of our imaginings but we feel it, we smell it, we sense it, and are happy. We find ourselves stopping in front of "Blank and Blank's Sporting Goods Store," and wondering insanely why they have no fishing tackle on exhibition; then, coming to ourselves we look about guiltily, fearful lest some one may have read our thoughts, and hurry away. We scan the pages of our favorite magazine for fishing tackle advertisements, squandering not a little good coin of the realm for postage in order that we may secure catalogs. And when the catalogs arrive the last "best

seller" from the book store lies unopened on the reading table. Talk about good literature! Give me a new fishing tackle catalog and you are welcome to the last novel. What joy to meet the faces of old friends, reels and rods tried and true, and to study the new wrinkles of the manufacturers. Yes, buy catalogs, it is an enjoyable and, you may discover, an expensive habit.

These are the evenings when your fingers will "itch" to do something. "Do not care to try fly making?" Suppose then you write some rod maker to ship you a rod ready for mounting and winding, with every thing complete, and build yourself a bait rod. You will be surprised how cheaply you can make a really splendid rod, and supply yourself with pleasant employment for many a long evening. If you are possessed of the necessary mechanical ability then get the wood in the square and shape it for yourself, but I think you will better be satisfied if first you let the maker shape the joints for you, then, after you have mounted one, try doing all the work for yourself. Should you be unable to find the address of a manufacturer, write me and I will be glad to supply you.

If you are interested in angling in California, or in sport along the Gulf of Mexico, then write the various railroads regarding information and

you will be swamped with literature more or less reliable as the case may be; but you will be surprised at the winter sport our country offers those who can afford it. The next best thing to indulging in southern fishing is to read the story of the fellow that has. Envy has no place in the true angler's heart.

So the days of snow, and cold, and frost, drag by. The sun, the liberator of our lakes and streams, is drawing nearer day by day; already he kisses the corner of my study table, which he has not visited for two months and three days. Yes, spring is traveling northward; we will have a glad welcome for her when she arrives.

STOCKING WITH BLACK BASS

EDITOR ANGLING DEPARTMENT: We have a small lake some three or four acres in extent, which we would like, if possible, to stock with black bass; would you advise our doing so? — "WISCONSIN."

[No, unless you plan to feed them, for in so circumscribed an area they would not thrive because of lack of food supply. You say nothing regarding the depth of the lake. A good black bass pond should have holes at least twelve feet deep into which the fish may retreat on hot days and where they may go to hibernate. Of course a pond supplied with plenty of cool water would not offer so many difficulties.—O. W. S.]

FIT FOR BLACK BASS

EDITOR ANGLING DEPARTMENT: We have here in Minnesota a large lake a mile long by half a mile wide, swarming with perch and small sunfish, but no black bass. The lake is from eight to twenty feet deep, with several deeper holes. There is a great deal of grass along the edge and one large bed of pond lilies. There is a small creek entering the lake and a larger stream leaving it, proving that there must be feed springs. The bottom is muddy though at the lower end there is a gravel bed. Which species of bass shall we plant? Where can we secure fry? — M. A. WHITNEY.

[The lake should be ideal for black bass, either species, though the chances are that the large mouth would thrive best owing to the muddy bottom. The gravel bed you mention should make a most excellent "spawning bed." There is no doubt an abundance of food, such as minnows, crustacea, frogs, larva, etc., the character of the lake would argue as much. Write your State Fish Commission, probably they can supply fry, will be glad to do so, on condition that you meet the fish car and do the planting. I take it for granted that it is not a

private lake. If you wish to buy write Commission for address of nearest commercial hatchery. The Waramus Small-Mouth Black Bass Hatchery, New Preston, Connecticut, Henry W. Beeman, proprietor, is the only commercial hatchery dealing in fry of small mouth for stocking purposes.—O. W. S.]

TIP FOR THOSE WHO TIE FLIES

EDITOR ANGLING DEPARTMENT: I am trying to tie my own flies but have trouble in waxing the binding silk, my fingers get sticky and then everything clings to them. Is there another way of waxing? The Outer's Book is getting better 'n better. — "NIXIE."

[Fold a small piece of soft leather, buckskin is ideal, and place the wax in the fold. You can thus hold the wax firmly without having the fluffy material with which you are working clinging to your fingers. The gentle pressure of your thumb and fingers will wipe off all lumps of wax that cling to the binding silk and leave it smooth.—O. W. S.]

THE "BEAVERKILL" TROUT FLY

EDITOR ANGLING DEPARTMENT: I have derived much instruction and entertainment from your "Answers to Correspondents" and hope that the department will be enlarged; to that end I am going to ask for a little information. Will you kindly describe the trout fly known as "Beaverkill," and if possible give something of its history? — C. B. COLESON.

[The dressing of the Beaverkill is as follows: Body, white silk floss, with slight show of gold tinsel at butt; legs, brown hackle wound whole length of body; wings, blue heron. As will be seen from foregoing the Beaverkill is a rather striking fly, but then, what properly made fly is not? Owing to the wing feathers the fly is ordinarily tied on small sized hooks, No. 6 or No. 7. Some makers use curlew feathers for wings instead of blue heron, arguing that the more delicate feathers are more in keeping with the "lines" of the fly.

I am under the impression that the Beaverkill was introduced from England some fifty years ago by Judge Fitch and named by him.—O. W. S.]

A GOOD PLACE FOR BLACK BASS

EDITOR ANGLING DEPARTMENT: I can but appreciate your article in the Angling Department of November Outer's Book, in which yourself and another true disciple of Father Isaac give the readers of your valued magazine information

where to catch bass and muskies. I know that all readers of your good book will join me in a word of praise for such friendly interest. Most fishermen, amateur and professional, are inclined to be a little selfish in disclosing good localities for fishing. In the future let us all give a helping hand to the needy, thus pass the good word along.

To our friend who is looking for black-bass fishing where he can be beyond the reach of "resorters," I would say: go to Spooner or Shell Lake, Wisconsin, and drive out to Warner's Lake which is about fifteen miles from the towns mentioned. I would say go in June or September, though the latter is the best month. Kindly let me know after you have given the place a trial whether you are disappointed or not. Brook trout are also found in some of the nearby streams, "good ones" too.

At my home town—Madison, Wisconsin—we can boast, so far as I know, of the largest small mouth black bass in the world. I have caught three which weighed six and one-half pounds each. No guessing about the weight, were weighed on standard scales to the ounce. Saw two others that weighed seven and one fourth pounds apiece. Now for the large small mouth—his lordship weighed eight pounds, ten ounces, and was taken from Lake Mendota, Wisconsin, as were the others. There are steel engravings of this fish to be had in natural size which will be an ornament to any fisherman's room. Furthermore, each picture is accompanied with sworn statement as to weight and place of capture. Citizens of Madison will verify my statements. Yours truly,

W. G. DUNN, (Pickerel Billy).

[The above story is indeed a "whopper," but true nevertheless. The fish was caught by a gentleman living in Madison. We hope in the near future to supply our readers with a few particulars and, if possible, a picture of the monster. Have courage, fishermen, the "big one" does not always escape.—O. W. S.]

A HANDY VISE

EDITOR ANGLING DEPARTMENT: I note "Fly-Maker's" inquiry in the December number relative to a vise for tying flies, and in that connection I want to make a suggestion, which, I think will be interesting not only to fly makers but to anglers generally. I am not much of a trout fisherman, hence not particularly interested in flies, but I love to tinker at tackle. To that end I carry a veritable little machine shop in my tackle box and make such use of the tools constituting the same, that a sarcastic fishing companion on occasion disgustedly remarked, "You don't go fishing to fish; you go to tinker tackle!" In that he was not so far wrong, and in my tinkering I had often felt the need of a vise, the use of

which would leave both hands free. I wanted one that I could use anywhere, and I met the requirements by remodeling the smallest jeweler's vise I could find. With a hack-saw I cut off all the clamping parts, filing the lower part of what remained to a more or less graceful taper, and then bored into the under side to make a seat for a sharp steel spike. I threaded the bore and the end of the spike, but it would have been just as well to have forced it in without threads. Holding the vise like a peg-top, a sharp blow will drive the spike into a boat seat, or a board, hard enough to hold the vise rigid. I have found it very convenient indeed. Of course, not every angler has the tools I happen to have, but in any village can be found a machinist or tinkerer who can do the work, and it is not much of a job. Yours,

MACHINIST.

PROPER LENGTH OF A BAIT ROD

EDITOR ANGLING DEPARTMENT: I have been a diligent reader of your department ever since you took hold of it, and, while I appreciate it, will you allow one criticism, or perhaps I should say suggestion. Why do you not give more room to correspondents? The department is getting better every month, I say that for your encouragement. I take five out-door magazines and can say truthfully that I find the Outer's Book most suggestive. Can you find time to answer one question for me—what is the proper length for a bait rod?

O. D. SYMONDS.

[It is such letters as the above that does the heart of the weary editor good. There are two reasons why we do not give more room to correspondence, lack of room and lack of questions of general interest. The editor personally answers all letters that come to his desk, and if he thinks them of sufficient interest, questions and answers are published if there is room. The editor dare not send too many letters for publication for fear that the management would fail to find room. However, you will note that more and more room is being granted to the anglers. Keep it up boys and we will yet show 'em an Angling Department, as the darkey said of the catfish, "to boss 'em."

Regarding the proper length of a bait rod you have asked a question impossible of answer, for as has been stated elsewhere in this department, no two anglers will ever agree on that point. Read "All About Bait Casting," and you will discover what the writer thinks, but his opinion is only his opinion. In "Fishing Kits and Equipment," Camp says, "For practical angling it is now pretty generally conceded that the proper length for the casting rod lies somewhere between 5½ and 6 feet." In my opinion a 6-foot rod is not too long. Let me whisper it, but I had rather add 6 inches than subtract 2.—O. W. S.]

The Angler's Book Shelf

[EDITOR'S NOTE:—Hereafter we are going to devote one page of our department to brief notices of books of interest to anglers. The field is a broad one. There are technical books, like Camp's "Fishing Kits and Equipment" (reviewed this month) to which one will go as he does to the dictionary for information; there are also books, like Van Dyke's "Little Rivers," to which one will go for rest and mental refreshment. Both classes of books should find a place on the angler's table. The editor holds himself free to review any book of interest to brother (and sister) fishermen.—O. W. S.]

"FISHING KITS AND EQUIPMENT," Samuel G. Camp, Outing Publishing Company, New York. Price, \$1.00.—Now and then a book is produced which is of more than ordinary interest, such a book is the one bearing the above title. Camp has succeeded in packing a wealth of reliable information between the covers of his little book, just the sort of information the young angler wants, but often does not know how to secure. The author discusses fly and bait rods, their proper length and mountings. He also discusses the reel question, and devotes considerable space to flies, fly-books, landing nets, baits, etc., etc. It is a simple little handbook which one can carry in his pocket. A library of ready reference. Of course all old rodsters will not agree with some of his conclusions, that goes without saying, but one who follows Mr. Camp's advice will not go far wrong. We heartily commend it to the fraternity.

"FAVORITE FLIES AND THEIR HISTORIES," Mary Orvis Marbury; Houghton, Mifflin Company, New York. Price, \$5.00.—This is in every sense a beautiful and valuable volume, beautiful in workmanship and illustrations, and valuable in subject matter. The book contains 32 colored plates, illustrating 17 hackles, 18 salmon flies, 48 lake flies, 185 trout flies and 58 bass flies, there are in addition a number of engravings and reproductions of photographs. The history of each fly is given, so far as possible, a history, by the way, that will often surprise and astonish the reader. I will confess that when I first received the volume I sat up late into the night tracing the histories of some of my favorite flies, and as a consequence there was born in me a new respect for the fuzzy wuzzy lures. Every lover of fly fishing should own the book. The style of the author is eminently suited to the subject, take this as an illustration—"Empires have risen and fallen; cities been built, lived in, and crumbled to dust; continents discovered, populated, and grown old in wealth

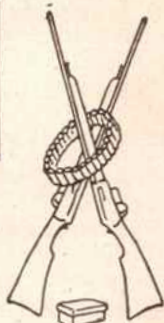
and culture; human ingenuity has conquered space, and the knowledge of new inventions has sped round the world to the aid of all men; unknown forces have been made familiar, and now light our ways, warm, feed, speak for us, and convey us where we will; but in all these strides we who fish have carried with us, and handed on down through the ages, the tiny 'bonny red hackle'." That one article, "The History of The Red Hackle," is to me worth the price of the book. One feature of the work we must not fail to mention is the letters from anglers living in almost every state of the Union giving the names of the flies best adapted to the various localities.

"AN ANGLER'S HOURS," By H. T. Sheringham, Angling Editor of "The Field;" Macmillan & Co., New York.—This English book, unlike so many of the American books of the present day, is not a "how to" book, though one may derive much instruction from a perusal of its pages. Some of the sketches appeared in "The Field" and "Macmillan's Magazine," but that does not injure them in the least, and the author seized the opportunity to thoroughly revise each one of the articles. The author's style is delightfully familiar, the reader feels as though he were sitting by an open fire listening to the narrator. I would especially recommend the essays entitled "At Dawn of Day," "A February Pike," "May-Day on the Exe," "Three Wild Days in Wessex," and "Lady Maud's Walk." I do not care to confess how many times I have read the first sketch mentioned, which is Chapter I of the book. We do not have enough such writing in America, we are too practical. Our books must be of the class called "how to," and our magazines have been inoculated with the same virus. We need the practical, yes, but we also need such books as Mr. Sheringham has given us. Buy both kinds. The magazine which succeeds in combining the practical with the literary is the magazine bound to succeed.



GUNS AND AMMUNITION

EDITED BY ROBERT A. KANE



This department is intended to be a place for the exchange and discussion of views on any subject pertaining to arms and ammunition, from which no one with an idea to advance shall be barred. The only conditions are that the opinion must not be manifestly absurd, that it be expressed in courteous language and that no personalities be indulged in. Each opinion is printed for what it is worth and its publication does not commit the editor to the view expressed. The widest range will be permitted and our readers are invited to make free use of these pages, but it is important to remember that *under no circumstances will personalities ever be permitted.*

The Flight of the Modern Bullet and the Wound It Makes

By DR. A. HOYT

Professor of Physics in the University of North Dakota

THE history and science of the development of the various weapons which have made man the supreme animal form an intensely interesting study for the anthropologist, the physicist, the physician, the military man, and last but not least, for the out-of-doors man, whether he use his weapons for the chase, or is a shooter because practice in that art appeals to him as should any other good clean sport.

It is not my purpose to enter into a mathematical treatment of the motion of projectiles, nor am I able to use with fluency the line of jaw-breaking names by means of which the learned surgeon explains what is the matter with a man who has gotten in the way of a cannon-ball.

Owing to the widely differing concepts, preconceived ideas, and erroneous impressions prevalent among most people who have given the matter any thought, it will be necessary for me to carefully define certain expressions which would otherwise seem very technical to the uninitiated. Moreover, owing to the wide scope of the field, I shall limit my remarks to small caliber projectiles, and more especially to rifle and pistol bullets.

In the first place, every projectile has two motions, each of which produces its own effect independently of the other. This is demonstrated by a very simple experiment. If a marble is shot horizontally off of the end of a table at the same time that another marble is dropped straight down from the end of the table, they will both reach the floor at the same time.

This means that the fall of the marble occurs in exactly the same way whether it has a horizontal velocity or not. It means that if you stand on the shore of a lake and fire your rifle in a horizontal position that the bullet will strike the water in exactly the same time that it will if dropped freely from the same level as the end of the rifle. There is a very slight deviation from this law for an elongated projectile, this being due to certain peculiar motions caused by the spinning of the bullet about its axis. This deviation is so small that no ordinary experiment would detect it. In other words, the bullet continually falls as it flies, causing the path to be curved, or parabolic.

The motion of a falling body is not a uniform one, but one of rapidly increasing velocity, so that a bullet drops much more rapidly at the end of its flight than at the beginning. Then, too, the effect of the air resistance is to make the time required for a given flight longer, which also gives more opportunity for the bullet to drop. The net result is that the latter part of a long flight is very much more curved than the beginning. Contrary to the current impression, there is no part of the flight, not even the beginning, which is flat, or straight. The faster the initial velocity of the bullet, the less time does it have to drop, and the flatter the gun shoots.

A second point about which there is much wrangling, due to loose definitions of the terms used by the disputants, is the question of the "knocking down" effect, or shocking power, of a bullet. This quantity may be easily measured

by shooting the ball into a heavy pendulum, and noting the amount of swing caused by the impact. There is, however, a simple way of calculating the shocking power when the weight and velocity of the ball are known.

For instance, the old Springfield musket of the Civil War days had a 500 grain ball moving at the rate of about 1000 feet per second, and a shocking power measured by the product of these quantities, that is, by $500 \times 1000 = 500,000$ units (71.2 pd. ft.). The modern Springfield, the new rifle of our army, shoots a 150 grain ball at the rate of 2700 feet per second, giving a shocking power of $150 \times 2,700 = 405,000$ units (57.7 pd. ft.). The Krag-Jorgensen has a 220 grain ball moving at the rate of 1900 feet per second, and hence a shocking power of 418,000 units (59.5 pd. ft.). The tendency is towards somewhat less shocking power than in the older model guns. From this it is evident that the shocking power is not the only factor that enters into the rifle question. The other more important factor is the energy of the ball just after it leaves the muzzle. This is a quantity that is not easy to define except in the technical language of the physicist and engineer, but I believe that I am not far wrong in explaining that the energy of a bullet is the measure of its destructive power, but not of its penetrating power. Suppose that two bullets, one .22 inch or about $\frac{1}{4}$ inch, and the other .44 inch, or nearly $\frac{1}{2}$ inch, penetrate into a pine log to the same depth. Obviously the .22 has not destroyed or smashed as much material as the .44, which bores a hole twice as wide, and four times as big in cross-section. Therefore the penetration cannot alone measure the energy.

If the resistance of a block of wood were the same for all velocities of the bullet, which is not exactly true, the energy might be represented by the product of the depth of penetration by the size of the hole, thus giving the amount of material crushed. This might be considered as a rough definition of the energy, but for finer comparison it will be best to use the exact expression $E = \frac{1}{2}MV^2$, which gives the energy in terms of the velocity and the weight of the ball.

Turning for a moment to our former illustration, the old Springfield would have an energy of 250 million units, which expressed in the engineer's units would be 1116 foot pounds. The Krag has 1880 foot pounds, and the new army Springfield 2430 foot pounds. Thus it is seen that the old rifle of the Civil War had somewhat more shocking power than the new Springfield, but far less energy, and less than half the velocity. In comparing the two types, however, it must be remembered that the ball of the older rifle generally stopped in the body of the wounded man, expending upon him the whole of its shocking power and energy, while

the new Springfield and other rifles of this type will shoot through many men in line, giving only part of the shocking power and energy to each. It will kill more men and at longer range, than its predecessor, but except at very close range where the explosive effect of the ball is of importance, it will not stop a man or beast, as effectively as a heavier ball, with less velocity and less energy, with small penetration but more shock. The British discovered this in the Soudan, where the mad charging dervishes could be shot full of .303 caliber holes without stopping them, although they died later, of course. In order to cause more of the shock and energy to be expended in the first object struck, the dum-dum or mushrooming bullet, oftener called the soft-point, has been introduced, and is now used in practically all high-power big game rifles, but is outlawed in warfare on account of the fearfully ragged wound it makes.

The modern military rifle shoots a bullet with a steel or cupro-nickel jacket, which enables the ball to follow the rifling in the barrel without stripping and thus fouling the barrel. This ball has enormous penetration, in some cases six feet of soft pine, and at long ranges, where its velocity has been reduced by air resistance to less than 1200 foot seconds, it makes a small clean wound. If, however, the tip of the steel jacket be left off, so that the soft lead point of the bullet is exposed, the effect is very different, as the lead rolls back in the shape of a mushroom, as soon as the bullet strikes a substance of even very slight resistance, causing a ragged wound, and having such reduced penetration that all of the shock and energy of the bullet is expended in the object or animal struck. This expanding, or mushrooming effect may be shown by shooting two bullets with the same velocity into a block of wood. If one is a full metal patched or jacketed ball, and the other is a soft point, there will be a great difference in the size of the holes, and in the penetrations in the two cases, and if the two bullets be recovered, the one will be found only slightly deformed, while the other is an unrecognizable lump of lead, with jagged pieces of the metal jacket embedded in it. The wound made by a sporting rifle using soft-point bullets will evidently be a bad one for the physician to treat, if indeed, as is often the case, the patient does not bleed to death before he can be gotten out of the woods.

One of the fundamental principles of physics, susceptible of easy verification in the laboratory, is the one which shows us that when the powder explodes in the gun, the momentum of the gun and the shooter is equal to the momentum, or shocking power of the bullet. Fortunately the respective energies are not equal, or no man would fire a gun more than once. It is less injurious to receive upon the shoulder, or nose,

as the case may be, the recoil of a heavy gun, which kicks back slowly, than the recoil of a light gun which kicks back rapidly under the same load. The shock is in each case the same, as can be shown by actual measurement, but the destructive power, or energy, is more for the lighter weapon. On this basis it is seen that the old style ball with its large shocking power requires a heavy weapon from which to be discharged, in order that the recoil or kick be not too energetic.

Some of the older military and hunting rifles weighed from 11 to 14 pounds and the ammunition was so heavy that a man could carry only thirty rounds where he now carries 150. Then too, the slow velocity of the ball, its consequent rapid drop, and short range made good shooting very difficult.

There are some who say that in those days they could shoot so well that they did not need all of these "new fangled contraptions," but let me remark in passing that the American people are shooting more and better than they ever did, and that the records of the recent rifle meets where the new Springfield was used show scores that have never been equalled anywhere or at any time.

The question of caliber is a complex one, and I shall only point out that the large diameter ball experiences more air resistance than the small one, thus losing its velocity more rapidly when other conditions are the same. The modern military rifles of France, Germany, England, Italy, and the United States, all are between .30 and .32 inch caliber, and have a very long completely jacketed ball which leaves the muzzle with a velocity of over 2000 foot seconds, and with a rapid spinning motion which is imparted by the twisted grooves, or rifling of the barrel. This spinning motion keeps them head on in their flight. The high initial velocity, sharp shape, and small air resistance insure very little drop within the ranges where an ordinary marksman can hit anything. The flight is exceedingly flat up to 300 yards, after which their velocity is sufficiently reduced so that the drop from then on is considerable.

The modern rifle has then the advantages of light weight, the new Springfield weighing about 8 pounds, light ammunition, less recoil, more energy, longer range, and increased accuracy. It has the disadvantage of less shocking power unless the range be very short, or soft point bullets are used, which under unusual or peculiar circumstances may not mushroom. These changes in the favorite weapon of man have introduced some new and interesting phases in the study and treatment of wounds. The modern rifle, aside from the expanding bullet effect, shows another even more remarkable phenomenon at close range, while the velocity is still very high. This is

what I shall call the explosive effect, and accounts for many of the so called "freak wounds" made by the newer rifles.

The following experiment illustrates this effect. Two exactly similar tin pails full of water and open at the top, are shot straight through the middle with two exactly similar bullets, one moving at the rate of 1000 foot seconds and the other at the rate of 2000 foot seconds.

In the case of the slower ball the water is violently ejected from the pail, but aside from a small hole at entry, and an only slightly larger one at exit, the pail is uninjured. The high velocity ball makes an equally small hole on entry, but the whole pail is simply blown apart, or exploded as if by a charge of dynamite placed inside of the pail. The explanation is not difficult. Water is an ideal medium for transmitting pressure, and the velocity of the ball is so high that the water has no time to rise out of the top of the pail and get out of the way. Hence the enormous pressure of impact of the bullet is delivered in all directions, laterally, up and down, as well as straight forward ahead of the bullet.

This effect has nothing to do with the nature of the point of the bullet; it is the same whether the point is soft or steel jacketed. A low velocity ball, even if a large one, seldom produces this effect, and a very light ball, if moving rapidly, will always do so.

The importance of this effect in producing wounds at close range can hardly be overestimated. If the bullet strikes some watery part of the body, such as the brain, or the stomach when full of liquid, the wound may be terrible. Even in the case of penetration of solid flesh and bone only, the lateral pressure produced may cause disturbances of nerves and organs far distant from the wound itself, and far more serious to the patient in consequences. This same bullet, after a longer flight, and consequently reduced velocity, generally produces a clean, small wound, which according to the reports from the Spanish-American War (House Documents, Vol. 112, No. 729) are strangely enough generally aseptic, even when made by a ricocheted ball, although in the latter case the wound is more ragged, and the ball has less penetration.

The expanding or mushrooming effect of the big game bullet is also worse at close ranges, for the soft nose of this bullet will not roll back into a good mushroom unless the velocity be rather high, probably at least over 1000 foot seconds. Hence it frequently happens that at very long ranges the hunter bores a neat little hole in the game, and there is not enough blood to follow the trail. It is often said by old hunters that for every deer brought in, two are killed, the one dying as surely as the other, but out of the reach of the pursuer. For this reason

there is to be noted a tendency in modern sporting rifles back towards the larger calibers, retaining however the high velocity and great energy which nitro or smokeless powders and nickel steel barrels have made possible. All of these developments, in a lesser degree have been repeated in the history of the revolver and of the automatic pistol. I may say in passing that it seems to me that the velocities reached in the case of the Mauser, Luger, and Colt pistols, high as they are, do not reach the point where the expansion of a soft nose bullet is certain, so that for stopping big game they are not as effective as the old .45 Colt and others. Moreover, the soft point bullet is outlawed in civilized warfare, so that for military purposes these small caliber, high velocity bullets having the advantages of long range, great penetration and accuracy, are open to serious objections. The tendency in the U. S. A. is back towards the larger caliber in the case of the pistol, although the automatic feature will probably be improved and introduced later.

As a weapon of defense, the small caliber automatic pistol is again open to the objection that while it may shoot the burglar full of many holes in a surprisingly short fraction of a second, so that he is of small consolation to his friends later, it may nevertheless not stop him before he has a chance to shoot back. The great penetration and range of these bullets put the innocent by-stander in as much danger as the fleeing criminal when the city policeman is obliged to draw his weapon.

The wounds made by the modern pistols, using steel jacketed bullets, are usually clean cut, and the bullet seldom stays in the body. The explosive effect is nearly absent except perhaps in the case of the Mauser and of the Luger at very close range. These bullets do no accumulate dirt with age as do the plain lead bullets, which may partially account for the fact that their wounds are so often aseptic. Another feature is the fact that nowadays the surgeon's first effort is not necessarily to remove the bullet, but rather to heal the wound. It was strikingly demonstrated in the Spanish War report already referred to that the ball itself seldom does harm if the wound be clean and kept aseptic, unless the bullet is lodged near some nerve center, or in a joint.

The X-Ray photographs in this report show clearly the facts brought out by my previous discussion of the wounds made by military bullets at long and at short range. For instance, after penetrating bony parts, the amount of comminution of bone was, at long range, seldom great. Unfortunately very little of the data refers to short range wounds, as the conditions of modern warfare prohibit this happening, ex-

cept in rare instances, in which cases the weapon is not always the rifle. The following table compares the ballistics and wound effects of the older with the modern rifle bullet:

	MODERN BULLET	OLD STYLE BULLET
Weight of Ball.....	Light.....	Heavy.
Shape of Ball.....	Pointed.....	Snub-nosed.
Shocking Power.....	Medium.....	Great.
Penetration.....	Great.....	Small.
Energy.....	Very high.....	Not very great.
Trajectory.....	Very flat.....	Much curved.
		great drop
Expansive effect (sporting rifles only).....	Great, especially at short range.	Not very great.
Deformation, (military rifles).....	Very little.....	Irregular and frequently large
Free recoil.....	Small.....	Great.
Range.....	Great.....	Very limited.
Wounds (military).....	Aseptic in many cases except at close range.....	Septic as a rule.
Wounds, long range.....	Clean Cut.....	Irregular and generally lodged ball.
Wounds, med. range.....	Clean cut, no lodged ball.....	
Wounds, med. range.....	Very ragged, with large torn exit (sporting rifle only).....	
Wounds, short range.....	Explosive effect.....	Very little of the explosive effect.
Comminution of bone: Military, short range.....	May be great.....	Great.
Military, long range.....	Very little.....	
Sporting, short or medium.....	Very great.....	
Danger zone.....	Great.....	Relatively small.
Report.....	Sharp Crack.....	Roar.

Most modern of all rifles is the automatic, whose recoil is largely absorbed by a spring, and is utilized in ejecting the old cartridge and putting in a new one. The ammunition used is of the modern high velocity type, and of rather large caliber, especially in the case of the new .401 Winchester. In concluding, let me express my obligations to the Ideal Manufacturing Company's Hand Book, to the tables published by the Winchester Firearms Company, and to many articles by fellow gun cranks in the current literature of the day. Many of my conclusions are the result of my own experiment in the field and in the laboratory, and the figures on shocking power are computed very largely from my own data. The following table gives the ballistics of some of the best known modern rifles:

Rifle	Weight of ball	Velocity	Shock	Energy	Penetration Boards
.45-90 W.....	300	1480	62.5	1457	19"
.45-90 WHV.....	300	1925	82.5	2466	26"
.30-40 Krag.....	220	1960	56.7	1880	58"
.30-30 W or M.....	170	1950	47.1	1449	42"
8mm. Mannl.....	236	2080	70.	2270	62"
8mm. Mauser.....	227	2200	71.5	2440	66"
.30 U.S.A. new.....	150	2700	57.7	2430	
.303 Savage.....	190	1925	52.3	1564	42"
.405 W.....	300	2150	92.	3077	48"
.25-35 W or M.....	117	1925	32.1	985	36"
.401 W.....

Recovering Bullets From Oiled Sawdust

(Reprinted from "The Bullet's Flight from Powder to Target")

SNOW could not be used in warm weather for catching bullets and search was made for some material to act in its place, something practical for warm weather work. Inquiry by correspondence availed nothing; meal, bran, and shorts were tried and found wanting, while soft cotton mutilated bullets worse than a pine board. One day Mr. Leopold said, "Let us try some sawdust," having some in his hand at the time. A box was soon arranged and filled with sawdust that had been used in the hardening room of the shop for drying oily knives, and immediately tested; to our surprise the bullets were recovered without serious mutilation. Not another hour was lost in preparing a box of fresh sawdust with sufficient quantity of thin oil to allow desired experiments to go on.

Dry, wet, and oiled sawdust were severally tested (fig. 28), showing three .32 caliber, 187-grain Zischang soft lead bullets from a powder charge of 47 grains; the right hand one caught in dry, the center one in wet and the left-hand one in oiled sawdust. It will be observed that the one from oiled sawdust is perfect as can be detected with eye or magnifying glass, and hundreds have been caught in same manner to perfection though the reason why oiled sawdust so acts is not easily explained.

The correct method of preparing is to sift through a No. 12 mesh sieve fine maple or birch sawdust and mix with thin machine oil which will not gum. The dust takes much oil, and sufficient must be added to thoroughly saturate without dripping; then resift through a No. 6 or 4 mesh, and if properly prepared it will not cake but will fall into the furrow made by a bullet, as coarse dry sand will act.

At 100 yards the .32-40 bullet often penetrates this sawdust four or five feet, the distance varying with its speed, weight, and hardness, and whether it keeps point on or travels end over end. To determine many things respecting rifle bullets it is essential that some means should be utilized to recover them unmutilated at point and base after being shot, and this was a lucky find. (Fig. 29) is from a photograph of experimenters in the act of picking bullets from a box of oiled sawdust at shooting butt of homestead range.

SHORT-BARREL-SHOOTING

About the time tests were being made by shooting bullets into snow the question was

raised regarding to what place in the rifle the bullet upsets, and several schemes were devised to determine this, the most promising being to utilize barrels of different lengths, from one with a bore only $\frac{1}{4}$ inch long from chamber to muzzle, up to five or six inches or more in length. So far as could be learned, this question regarding up-setting of the bullet had never been determined or even mentioned except as a mere supposition.

In all these recorded experiments, extending over nearly 40 years, it will be observed they have generally followed new lines, never repeating the experiments of others which have been logically carried out. It has been rather experimenting by exclusion, and this, as will be readily recognized, entails much original labor and no little groping in the dark, so some of these short-barrel experiments were both laborious and amusing, also interesting.

During 1902 pieces were cut from a new .32 caliber Pope barrel, unfinished outside, 3-16, 1, $3\frac{1}{2}$ and $5\frac{1}{2}$ inches, besides proper lengths left in each for a chamber. Pieces were also cut in the same manner from a new .32 caliber smooth bore rifle, of 5-16, $\frac{3}{4}$, and $2\frac{1}{2}$ inches, and from a Winchester .328 caliber, No. 4 barrel, $\frac{1}{2}$, $\frac{3}{4}$, and 10 inches, while there was found on hand a new piece of a .40 caliber Stevens, 3 inches long, thus making an outfit of 11 short barrels.

(Fig. 30) on page 61 shows all but one of these barrels, the right-hand figure being the concentric action and wire trigger for firing, into which the respective barrels are screwed.

Figure (a) shows the unloaded shell, $2\frac{1}{2}$ inches long, and so placed that the several lengths of barrels may be compared, as may also be done by bullets in foreground. Figures (nn) show nuts for connecting one short barrel to another.

The above cut exhibits a short barrel when placed in its concentric action and lying in V-rest, recoil block behind, ready for firing. Another barrel attached to another concentric action is also seen ready for firing when transferred to the V-rest; in the foreground are the .32-40 shell and bullet. The barrel with its concentric action occupying V-rest is 5-16-inch long, the bullet issuing from muzzle being seated nearly to the shell in its chamber, and projecting from end of muzzle $\frac{1}{4}$ inch.



FIGURE 29

After turning all these barrels on new arbors to fit an inch reamed cavity in an iron tube, six of the .32 caliber and two of the .38 caliber barrels were chambered for regular .32-40 and .38-55 shells. This iron tube was for the purpose of making one barrel out of two or more by holding their ends together in a true line within; thus a 5-16 inch barrel could be made into 1 5-16 inches by addition of the 1-inch barrel, and other innumerable ones by different combinations.



FIGURE 28

That the results of an experiment do not always coincide with a theory, was demonstrated with a vengeance during the first few that were tried, to make two of these short barrels into one within the iron tube. The barrels were cemented in tube with a hard black wax, used to hold arbors from turning in a rifle barrel instead of driving them, which would

injure the rifling. In the second shot from this piecemeal barrel the explosion sent the forward barrel with bullet in one direction, and the other with its attached action in another. An attempt to secure these barrels within the iron tube by set screws proved a failure, the explosion was so powerful that if any gas leaked into cavity of the tube the ends of these 3/4-inch set screws were sheared off. It being evening and in the basement of a dark shop when this first experiment was made, the explosion furnished an entertainment and quite an element of danger which put Fourth of July into the shade.

Proper security was finally obtained by cutting threads on the ends of each barrel and joining by steel nuts (shown by figures nn of cut, page 61); and by venting joints with holes bored through the nuts, safety was assured.

The first real experiment was made with 1/4-inch barrel laid in V-rest; placing a box of snow, with the thin cardboard which formed one end, in front of and 24 inches from muzzle, the first shot was made January 15, 1902. The bullet printed in center of target, point on, making a clean half-inch hole and was recovered from snow completely flattened by the muzzle blast, thus accounting for large print through the cardboard. It is hardly possible for those not present during these tests to appreciate the condition of affairs which is here indicated and recorded for the first time.

Experiments were made with these short

barrels, extending over a year, with different lengths, different combinations, with various alloyed bullets, with nitro powders both coarse and fine grained.

Eighty-nine 187-grain bullets were secured in the same shape as they left the different muzzles. It was noisy sport and necessitated stuffing cotton into one's ears for protection. This medley of tests was carried on at the range with concentric action and V-rest and multiplied out of curiosity. Perhaps the accompanying cut (fig. 32) will be of interest as it represents the 187-grain unshot Zischang bullets and a number fired from short barrels.

Figures 1, 7, and 14 are unshot bullets; 2, 3, 4, 5, and 6 are bullets fired from one short barrel into the muzzle of another, entering into and emerging from the .32-40 chamber of the second barrel. Figures 8, 9, 10, 11, 12, and 13 were fired from a $\frac{3}{4}$ inch .32 caliber barrel through a 3-inch .40 caliber which was firmly screwed to the former; figures 15, 16, 17; and 18 were remarkably upset with 21 grains sharpshooter

powder, with no air space and .32-40 shell. All these bullets were loose-fitting or bore diameter.

With figures 2 and 8 the charge was front ignited; figures 6 and 13 were an alloy of 1 to 30 tin and lead; figures 15, 16, and 18 were shot with 21 grains of powder from a .32-40 shell, bullet entered half an inch into shell, leaving no air space, and extending .06 inch out of muzzle. The apparent tears seen in bullets were produced by a sharp steel prong, placed at varying distances from muzzle and also varying distances from line of low side of

the rifle bore. This prong was accurately adjusted by a screw and by it was determined at what position from muzzle many of these bullets commenced to upset, and at what position they completed their upsetting. It was found that many of them commenced to swell slightly at .06 inch from muzzle, and all that were tested received their full upset during first inch of flight of their bases from muzzle. Figures 15, 16, and 18 pretty well illustrate W. E. Mann's putty-plug theory.

Figure 17 was fired from a 62-inch barrel,

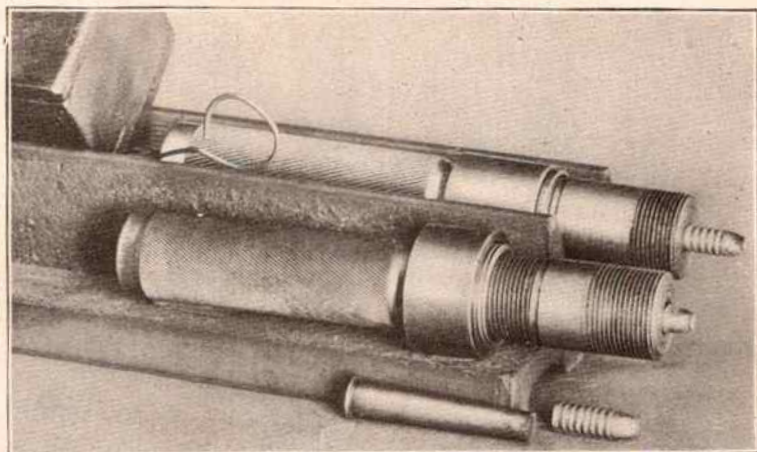


FIGURE 32

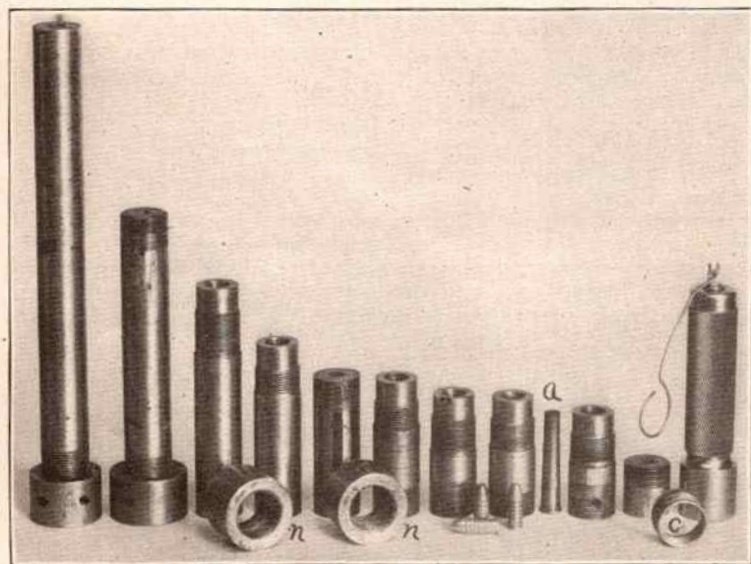


FIGURE 30

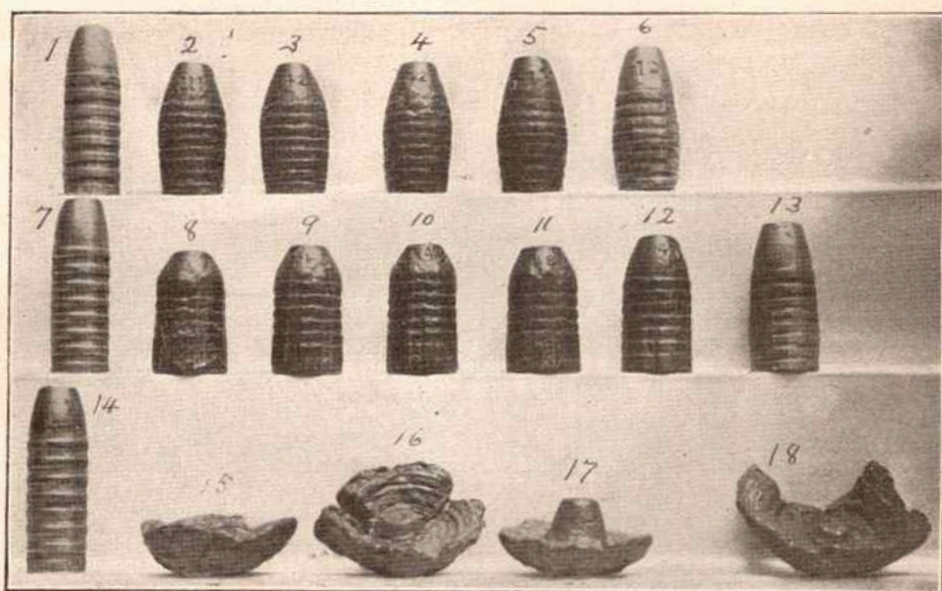


FIGURE 31

.32-.40 shell full of Du Pont's .30 caliber high-pressure powder, leaving no air space, body of bullet extending .06 inch from muzzle and no prong interposed to obstruct.

It will be noticed that lead bullets, figures 2 to 6, and even the 1 to 30, after being driven through a 3.12 inch, .32 caliber bore, were expanded into the .32-.40 chamber, completely filling it. These bullets continued to enlarge as they passed into the larger portion of the still enlarging chamber until their diameter reached .386 inch for lead, and .379 for the 1 to 30, showing that they filled the chamber for two-thirds its length where its diameter is .388 inch; all this with a normal charge behind a loose fitting bullet.

It will also be observed that front ignition, as in figures 2 and 8, does not do away with upset, as has generally been supposed by some well-known riflemen. Shots represented by figures 8 to 13 inclusive, being bore diameter, not only upset into the .32 caliber rifling, but after traveling 3.12 inches they again upset and, with the lead bullets, completely filled a .40

caliber to bottom and corners of the grooves. The putty-plug theory is here again confirmed, but does not encourage the theory that bullets must be larger than bore in order to take its grooves.

Before snow-shooting and oblique-base experiments were made, or short-barrel tests attempted, brother William claimed that a lead bullet in a rifle bore was like shooting a plug of putty from a popgun. A little later, while working on the range, this idea was again brought up when he asserted, still more emphatically, and seemed to show how soft bullets would stick in the bore, being pushed out sidewise, either side first as might happen, by powder blast behind, like pushing a plug of putty from a popgun, and it was decided to thoroughly test the matter.

Measurements taken from bullet bases which were recovered during snow-shooting experiments, seemed to bear out W. E. Mann's theory and short-barrel tests showed up his theory so thoroughly that they were multiplied until it was substantiated.



Shotgun Balance

By H. W. HARMON

THERE have been few terms so generally used, or subjects so learnedly talked of, and so little understood, as shotgun balance. It is perhaps the most difficult to define, of all gun qualities, as here we find the verification of the old adage "What is one man's meat is another's poison." A long time ago, I had a very severe critic of some of my American Gun literature, who went into raptures over the superior balance of foreign high-grade handmade guns, and in a few paragraphs made clear his idea of balance, "The weight of the gun being so distributed as to be easily carried by the hunter." This may accord with the views of some of my readers, but it is not the balance referred to at the beginning of this article, but rather that quality the farmer's boy calls "feel" or "hang," as he applies it to his chopping axe, his scythe and snath, or hoe, and the mechanic to his hammer. We, who played ball in our early manhood on good teams, and went up against strong pitchers, will, if we "hark back" to the echoes of those days of yore, remember the care with which we selected our bats. How no description was vivid enough to enable another player to select for us, however superior as a batsman he might be. The two styles we used: one for the slow, curve heady pitcher, the other for the rifle shot delivery of the speed merchant. If you have handled the bats of a team of hard hitting professional players, you have been struck with the difference of balance in *your hands*, and if a player; have wondered how some expert could hit with the bat he used. If this diversity of opinion is so marked in as simple a thing as a base ball bat, with nearly straight lines, and made of one material, shall we wonder, with the combination of wood and metal, the curves and angles, pitch and cast off, length, weight, drop, straight grip, pistol, full and half grips, etc., etc., it is hard to determine our own perfect fit, to say nothing of describing it to a gunmaker so intelligently as to enable him to fit us,—or to a novice so clearly as to be of great assistance in selection. One might as well attempt to define perfection of feminine beauty and charm for the young lover's guidance. It is one of the interesting features of shotguns, that this balance is never the same, and never can be, with any maker; till man has reached the art of making *perfect duplicates*. Until that time, my dear reader, your favorite gun and mine, will possess an individuality all their own.

I recall today with the most vivid memory, a beautiful gun owned by one of our United States naval officers (of American make, too,) that I was asked to pass judgment on, whose balance (to me) was so perfect that I have hunted for years and years to find its duplicate, but in vain. I have one good gun that I have worked over and over, changing length and form of stock and barrels, till it, nearer than any I know, approaches that one ideal; but there is still a something it lacks of that perfection, that the experience of 50 years fails to reveal to me, and know of no further change I can make to bring it nearer.

Another gun of exquisite balance, that I saw in my boyhood days, was a flintlock double barrel of the most beautiful workmanship, ebony carved stock, 20 gauge, I think, made by Manton. I am now speaking of guns whose balance *fit the writer*. I do not think they impressed other shooters so deeply. Now in further illustration, I have two hammerless guns made by the Ithaca Gun Company. One from stock and the Company's selection from drop and length specifications. The other made to order, from the most careful description, and with the idea of making it a duplicate in balance of another gun. It is a beautiful arm, a delight to any gun lover, and every expert that has handled it, has commented on its exquisite balance, and in, *I think*, every case, said the most perfect they ever saw. Now to me, strange to say, its balance is not as good as the stock gun. Where is this peculiar property, this subtle distinction, that makes the difference? To my mind it lies not in one, but a host of features that combine to make our own ideal fit. I am of the opinion, however, that the greatest factor in fit is *in having the center of gravity*, at at point *very nearly* midway between the *portion* of the hands that support the gun.

Now, to return to the last named gun. That, I have every reason to believe, was made with great care; and so perfectly fits those experts who have handled it, why does it not fit me as well? For the reason that I hold my hand in a different position on the forestock than experts usually do. My belief is that to cut off one-quarter inch from stock, carrying the center of gravity a trifle farther forward, would remedy the difficulty completely for me, but would not improve the gun for the general user, so I simply change the position of hand and go along all right. Now, could we locate our point of balance

i. e., the position of the hands in relation of the center of gravity, as they support the gun, in bringing to the shoulder, we would seem to have some rule to go by in ordering. But here comes another complication. With some guns (usually those of light weight and straight grip), there is a tendency with most shots I have known, to support the stock on the second finger of the right hand, till just as the butt plate touches the shoulder. With a heavier gun, with full pistol grip, the weight comes more on the little finger, making quite a difference in the point of support, and if the individual keep the left hand at some point on forestock in each instance, a consequent different balance.

I hope I have made my meaning clear as to the relation of center of gravity, and points of support. If not, this illustration may help to understand my meaning. Should we wish to raise a heavy bucket, using both hands, we would perhaps pass a stick beneath the bale and then bring the point of contact as near as convenient midway between the hands; and it needs no philosopher to understand that this is essential to the easy handling of the bucket. It is just as true of guns.

One of the world's greatest gunmakers thought he had discovered the exact point where the center of gravity should be, in inches, and fractions from guard,—but alas, he had only found his own, and those who used the gun just as he did. Another great English expert asserts that the best balance is where "the greatest weight of gun's nearest the center of gravity." There is undoubtedly much in this, but not all. If my idea of balance is to be accepted, *viz*: (that quality and form, that makes the arm most easily aimed), for if the pitch is greater than the shooter's fit, with hands in their natural position, the piece would be aimed too low and if not enough, too high. Perfect balance means more; and length and form of barrels, size and weight of stock, are factors, as well as drop, and cast off. One of the best American makers advocates the use of longer barrels than the ordinary standard, on the ground that they are more easily aligned. In other words, they balance better. Another, equally good, recommends shorter than the common standard. With *their pattern* these give better balance. I personally agree with the latter. The weight is brought nearer center of gravity, and the shooter; and for another reason, the shorter arm can be borne with so much less fatigue. Now then, the novice may say: What is the use of my ordering a fine gun made to fit me, if it cannot be so definitely described as to enable the gunmaker to make it? In answer would suggest, that he find a gun that seems nearest his perfect fit, carefully take the measurements, drop, length of stock and barrels,

the distance of the gravity from front trigger, (*i. e.*, the point where the gun balances) and give to the maker as the *outlines of your ideas*, and giving him the liberty to work them out in accordance with *his*. With his greater experience and knowledge, you will probably get an arm that will give you better results and more lasting satisfaction than you could possibly unaided, select. Should first tests not be perfectly satisfactory correct the error by holding. Usually the shooting too low is corrected by using left hand further forward on forestock, and too high by bringing in.

My faithful reader who has followed me thus far has, no doubt, concluded I am a devotee to fit and balance. True, but not that intangible mysterious one, that the young clerk in the gun store assures you only exists in the high grade hand-made guns of Europe. It is a personal preference, and you may stumble on it in the production of some unknown maker, in a cheap, illy finished gun, and search in vain for it amid the artistic arms of the best makers of the world. And, when found, it may be disappointing. My worst fitting gun was my best game getter. This comes from the fact that almost every one has a personal error in his aim. Like the Irish priest: "I partly know my own weakness." I shoot too low for rising birds with my ideal fitting gun, and get the down drivers with considerable regularity, consequently a straighter stock than I commonly use would give better results. The shooting schools of England try to find the gun you hit with best, not handle most gracefully.

Again illustrating by the great American game, you, old player, will remember the pitcher you couldn't fathom, and as you retired disgustedly to your bench, the coach said: "You strike below every time, try a lighter bat next time up," and you did and hit. The peerless Wagner says, his secret is hitting "where they ain't." Precisely so, he intuitively makes allowance for curve and drop, and hits where the ball is to be at the meeting point. You make allowance for flight, and try and aim where the bird is to be,—and that pattern of gun that will best assist you in evening your natural weakness, will be your game getter, whether its handling balance is perfect or poor, the engraving artistic or crude. It is true that high priced English guns handle finely, and are good game getters, but I ascribe this last quality to the more open pattern than all the other good qualities. If I have made my meaning clear, and given any young sportsman "more light," I congratulate both him and myself. If I have failed: can console myself with the assurance that I am only one more of that great crowd of gun writers who have striven with the subject before me unsuccessfully.

Point Blank Range Trajectory vs. Accuracy

By LIEUT. TOWNSEND WHELEN

EVER since the adaptation of high velocity rifles to sporting purposes some fifteen years ago the majority of sportsmen have regarded the flatness of the trajectory as the most important element in a hunting arm. The questions always asked are: How flat is its trajectory? What is its velocity? The thought being that the flatter the trajectory the longer the range at which sure hits can be made, and the less important the question of accurate estimate of distance. Other things being equal, these facts are undoubtedly so; but are other things always equal? How about accuracy? Will a cartridge which, when fired at 200 yards raises only 4 inches above the line of aim give as good accuracy as another which raises 6 inches? Suppose we have two rifles, one giving a 4-inch trajectory at 200 yards and taking a 12-inch circle to hold its group of 10 shots at that range, and the other having an 8-inch trajectory but only requiring a 4-inch circle to hold its group. Which will have the longer point blank range at which sure hits can be made?

Some years ago Horace Kephart discussed the subject of trajectory and point blank range as follows: "Thus, for example, let us say that an 8-inch disk represents that part of a deer in which a bullet may be counted upon to inflict a mortal wound; then the deer's killing zone would be that distance throughout which the trajectory of the bullet would cut an 8-inch disk. For open country, where long shots are the rule, the rifle may then be sighted for an extreme rise of 4 inches above the line of aim, and the killing zone for deer will extend to that point where the descending bullet falls 4 inches below the line of aim. Remember that the line of aim or sight is different from the line of fire (prolongation of axis of bore), and that it is in the shooter's favor as will be seen below."

"Assuming, for example, that the highest point of the trajectory above the line of fire is $4\frac{1}{2}$ inches, for a given rifle, when sighted to strike center at 160 yards, and that this highest

point is at 80 yards (it would really be a little nearer the target but the difference is trifling at short ranges), also that the top of the front sight 1 inch above axis of bore; then the trajectory would be about as shown in Table No. 1, page 187.

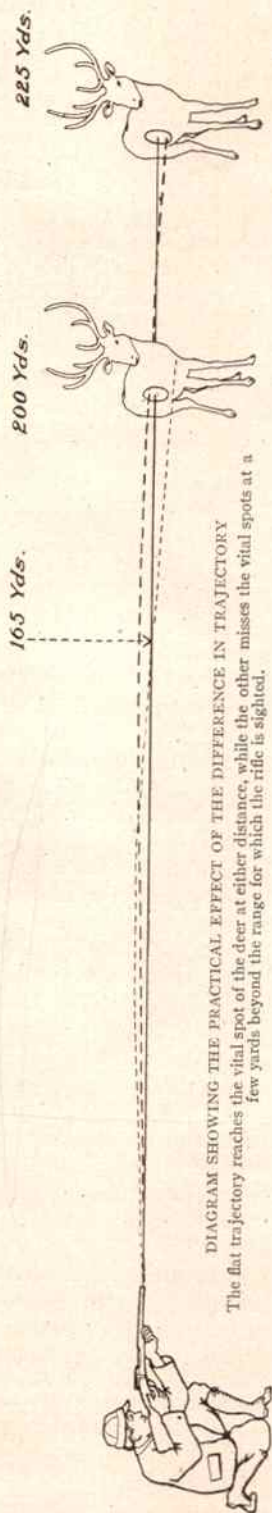
"This would be good for deer shooting up to about 200 yards without change of aim."

"But such a trajectory would be too high for shots near by. In the woods, where most shots are fired at from 40 to 100 yards, a rise of $2\frac{1}{2}$ inches at 40 yards and $3\frac{1}{2}$ inches at 60 yards would be excessive. For hunting in a locality where there is plenty of cover, this rifle should be sighted to strike center at about 80 yards; it will then shoot on a line practically level up to 100 yards."

Let us suppose that the rifle referred to by Mr. Kephart was the old reliable .30-40 Winchester. We see that if the rifle be sighted for 160 yards and the game be 200 yards away, the bullet descending falls 4 inches below the line of aim, and the rifle will evidently give a sure shot into the vitals of a deer at this range. But is this absolutely so? Let us look at the accuracy for a minute. There are three kinds of ammunition made for the .30-40 Winchester:—the full jacketed commercial, the full jacketed match ammunition, and the soft nose commercial. For the purpose of this discussion we can omit the first kind. The full jacketed match ammunition can be relied upon to give about a 3-inch group of ten shots at 200 yards; while factory and private tests of the soft-nose commercial ammunition, such as one buys in sporting goods stores show it to give groups of about 10 inches in good barrels. Of course different lots of ammunition and barrels will vary the size of the group somewhat but this will be about the average measure of accuracy of these two kinds of ammunition. In hunting rifles we have, of course, no use for the full jacketed match ammunition; it is the soft nose brand with which we are interested. At 200 yards,

therefore, grant that this ammunition will be sure to hit within 5 inches of the center of impact.

Now turn back again to the trajectory table. When the rifle is sighted for 160 yards it will strike 4 inches low at 200 yards and still hit the vitals of a deer standing at that latter range. But will it? Suppose that the particular shot fired at that deer is one which flies to the bottom of the group. That is it flies 5 inches low. Now we have not 4 inches low for the hit on that deer but 4 inches plus 5 inches or 9 inches. The shot strikes 5 inches below that 8-inch vital disk or 9 inches from the point aimed at. This shot probably passes under the deer and is no hit at all. We cannot therefore be sure of killing big game at 200 yards with this rifle, adjustment of sights and load. Two hundred yards is therefore beyond the point blank of this arm for deer. It might be argued that a sure shot could be made at 160 yards were it not for the fact that we cannot surely estimate the range correctly. By a similar computation we can figure out that, assuming we do not estimate the range correctly but rely on trajectory to help us out in this respect, 115 yards is about the maximum range at which we can be sure of hitting that 8-inch vital disk. This is not very comforting. The makers of the 8 m.m. rifle advertise for it a 300 yard point blank range, and as the .30-40 has almost exactly the same flatness of trajectory as the 8 m.m., many hunters have come to regard that as the point blank range of this arm. Here we find that in truth we must reduce this by 185 yards. We therefore see how inseparably we must consider trajectory and accuracy. What is needed in our rifle catalogues and books is a table of mean absolute deviation as well as one of trajectory. One maker does indeed give the accurate range of arms and ammunition, but will some one please tell me what accurate range means?



Does it mean the range at which one can hit a squirrel's head, or an 8-inch disk, or the bullseye of the military target? If the latter, pray what bullseye do they refer to when they say a rifle is accurate to 700 yards?

Let us now turn to a more cheerful example. We have discarded our old friend, the .30-40 for reasons above stated and we are looking for a new arm for upland game with which we can make sure shots at a longer range. The New Springfield with Model 1906 ammunition at once occurs to us because we know of its fine accuracy, its extremely flat trajectory, and we are also told that the full jacketed match ammunition, with which alone fine accuracy can be maintained, will give killing effects on big game.

On the opposite page is a trajectory table (No. 2) for point blank big game range for the rifle calculated with Mr. Kephart's rule, to which I have added the vertical deviation of match ammunition loaded with the 150 grain bullet and giving a velocity of 2700 foot seconds:—

In this table the rifle is sighted for 200 yards, and we see that should the game be at 100 yards the greatest deviation that can occur will be a shot 2.8 inches above the point of aim, while at 225 yards the greatest deviation will be a point 3.82 inches below the point of aim. The rifle will surely strike within the 8-inch vital disk up to 225 yards. If the theory of probabilities be taken into this calculation the point blank range may be slightly increased, until with the rifle sighted for 250 yards fifty per cent of the shots will strike within the 8-inch disk at 275 yards.

In table opposite, as a measure of accuracy, I have taken the mean vertical deviation, but this corresponds very closely indeed with the maximum vertical deviation or, in other words, with the radius of the shot group, for the match ammunition is so excellent that almost no off shots occur.

The New Springfield cartridge will therefore give a sure hit at big game at twice the range at which the old style high power cartridges of about 2,000 foot seconds will. But further than this we see how inseparably connected are accu-

racy and trajectory, and why, in making the choice of an arm we should ask not only what is its trajectory and velocity, but what is its mean vertical and mean absolute deviation.

TABLE NO. 1

	DISTANCE IN YARDS							
	20	40	60	80	100	120	140	160
Above line of fire, inches.....	1.89	3.33	4.19	4.50	4.28	3.47	2.07	0
Sight allowance, inches.....	.87½	.75	.62½	.50	.37½	.25	.12½	0
Above line of aim, inches.....	1.02	2.58	3.46	4.00	3.90	3.22	1.94	0

TABLE NO. 2

	DISTANCE IN YARDS			
	100	200	225	300
Trajectory, above line of fire, inches.....	2.50	0		
Trajectory, below line of fire, inches.....	0	0	1.90	9.00
Sight allowance, inches.....	.50	0	.12	.50
Trajectory, above line of aim, inches.....	2.00	0		
Trajectory, below line of aim, inches.....	0	0	2.02	9.50
Mean vertical deviation, inches.....	.80	1.60	1.80	2.40
Maximum deviation from point of aim with range unestimated, inches.....	2.80	1.60	3.82	11.9



Endurance Test of Automatic Pistols

WE learn from various reliable sources that the recent test of the Colt and Savage automatic pistols, by the United States Ordnance board was in every way successful. The test for endurance was exceptionally severe and exhaustive, over 6,000 shots being fired from each make of arm as rapidly as possible under the conditions of the test, water being poured through the barrels to cool them after each hundred rounds had been fired. To us the severity of the test as reported would seem unnecessary unless it was competitive between the two makes of arms. With the size of the caliber previously determined, speed of fire, reliability of function, with ease and facility of changing or refilling the magazine, should count for more than the mere endurance, which must always be limited to the number of shots that may be fired before the weapon becomes too

hot to handle. No type of pistol ever tested by any government has shown so many dependable qualities as the Colt and Savage in the trials just concluded; but notwithstanding their wonderful showing the arms were again remanded to the armorers and two months time allowed for minor improvements after which further tests will be made. Whatever the outcome of the final test may be, our ordnance experts have already demonstrated the superiority of the mechanical principle employed in the construction of American automatic pistols. American revolvers have for three quarters of a century maintained their supremacy in the domain of the one-hand gun and it must be gratifying to every native son to feel assured that there is little danger that conditions will be reversed with the new type.

About That Deer Rifle

By CHAS. NEWTON

I WAS not at all surprised to note in the November issue of this magazine an article commenting upon one written by me and published in the September issue on the subject of Big Game Rifles, and since it seems, as frequently happens, that my article did not cover all the ground I take this opportunity to supplement it by replying to the comment.

First, the "introductory slam," second, a charge that I was not entirely frank in that I quoted the energy of a rifle at the muzzle instead of at 200 yards, and third, that my hypothesis that the amount of nervous shock necessary to kill an animal, except the wound be in a nerve center, varied according to the size of the animal is incorrect. We will consider these three propositions as they arise.

First, the "introductory slam" is a very valuable part of that or any other article, for the reason that it gives us at the outset an idea as to the identity and also the personality of the writer, mentally and temperamentally, in fact imparting more information along these lines than could be derived from a page of autobiographical description, and in this case apparently disclosing that the article was really written by one who is a frequent contributor to *Outer's Book*, although his contributions are usually signed with another name. "The hands are the hands of Esau, but the voice is the voice of Jacob." Therefore this introductory slam is very useful, being sometimes interesting and always instructive and its use should be encouraged.

Second: As to the charge that the muzzle energy of the bullets was given instead of the energy at the 200 yard range, this was done for the reason that there are no American manufacturers who give the ballistics as to velocity and energy of their weapons except at the muzzle, or, to be more accurate, at the center of the chronograph range, which is usually about sixty feet from the muzzle, and the energy figures regarding this rifle were given for the purpose of comparison with those of other rifles.

Had the writer given the energy of the rifle in question at 200 yards the critic could, and doubtless would, have come back with the proposition that it should be given at the muzzle in order that it might be compared with other arms.

Further, the writer is willing to credit the readers of this magazine with knowledge of the

fact that bullets fall off rapidly in velocity and consequently in energy and this falling off takes place with the ordinary sporting and military cartridges as well as with the one under discussion.

Third, regarding the hypothesis that the amount of shock necessary to kill an animal when the bullet is not planted in a nerve center varies as the size of the animal, I still think this to be practically true.

I note the instance cited of the woodchuck being shot through and through about two inches forward of the hips with a .30-30 bullet and being able to escape into its hole where it was found still alive.

The writer has hunted woodchucks diligently for the past thirty years, his bag averaging about 150 per season during the last twenty years, and during the last twelve years of this time they were all killed with high power smokeless rifles, the first of which rifles was a .30-30 Marlin.

I have seen a number of woodchucks struck a grazing shot with a high power soft point bullet which would almost disembowel them, but which did not penetrate deeply into the abdominal cavity and these woodchucks were capable of crawling slowly quite a distance since the *nervous shock* was slight, the bullet merely cutting open the abdominal walls, but I have never seen one in which the soft point bullet was planted well into the abdominal cavity which did not collapse on the spot. Therefore I am forced to the conclusion that the woodchuck in question must have been shot with a solid point bullet.

It is true that a woodchuck will stand a great deal of shooting up at times, as I personally have shot one with a .45-70 black powder rifle, the bullet striking in front of the right hip and coming out just back of the left shoulder about midway, vertically, and this woodchuck ran a distance of forty feet before he died, but this is an entirely different proposition from the explosive effect of the soft point high power bullet.

A distinction which was not noticed by my critic is that those animals which hibernate during part of the year have a much lower nervous development than those which do not hibernate, and consequently suffer far less pain and less nervous shock from a certain amount of mutilation than do animals with a higher nervous organism, therefore the woodchuck,

raccoon and the bear require a far greater amount of mutilation to produce a speedy collapse, unless the shot be landed in a vital spot, than do those animals which do not hibernate. In fact the amount of shooting up which a raccoon will stand before succumbing to the shock is remarkable.

For these reasons a comparison between the hibernating and non-hibernating animals is practically useless.

I might further observe that the woodchuck in question is said to have crawled a distance of thirty feet. A deer, elk or moose which traveled thirty feet after being shot would be considered to be killed very quickly, also even at ten times this distance, and the condition of a woodchuck shot through the body with a rifle is such that he crawls very slowly and for a comparatively short distance, although in his particular case two feet is often enough to lose him to the marksman, while a deer bounding away at full speed is an entirely different proposition. Were the speed of the deer retarded to as great an extent as that of the woodchuck the effect would be practically the same as instantly dropping it as far as securing the game is concerned.

Furthermore the shots upon woodchuck cited by the gentleman also the one cited by the writer are exceptional shots and not the rule, while the deer running for miles after being hit is so frequent as to be almost the rule instead of the exception, as witness the quotation from Mr. Van Dyke's work in my former article.

The article states that "a bullet weighing 150 grains driven through the heart, brain or spinal cord of an animal will kill just as surely as one weighing 500 grains." All of which is correct and the same might be said of a bullet weighing 50 grains, but the trouble is to *drive it through heart, brain or spinal cord of the animals*; while the succeeding phrase "and may be relied upon to kill at a greater distance from the hunter" needs no argument to prove it incorrect, since, as above mentioned, the problem being to *drive it through* the heart, brain or spinal cord, I insist that a 500 grain bullet so driven will be just as deadly as one of less weight.

It is easily to see that the gentleman is not himself a hunter as men who have had experience in driving the bullet through the heart, brain or spinal cord appreciate somewhat the difficulty of performing this feat, which my antagonist performs so easily at his writing desk. Theoretically the heart, brain or spinal cord is the proper place to plant the bullet but practi-

cally the planting of it in those places in wild game is usually a matter of accident, as appears by Mr. Van Dyke's testimony quoted in my former article, and if by any chance the captious one should be a person capable of hitting either the brain, heart or spinal cord of an animal the size of a deer four times out of five at 75 yards with a sporting rifle he may well feel lonely for there are but few of his kind in the world; hence my conclusion that this remarkably good shooting can only be done from the armchair before the desk. The only man who was ever able to perform this feat consistently was buried by James Fenimore Cooper in the prairies of the West, with the stuffed body of his faithful hound at his feet, many, many years ago.

While still in his teens the writer was hunting woodchuck one summer day with a rifle when a crow flew over and was killed on the wing by a lucky shot; later in the day the same thing happened to a hawk, both being killed with the first shot fired, and the writer then jumped at the conclusion that the proper way to shoot birds on the wing was with the rifle and he argued very earnestly that ruffed grouse could and should be hunted with the rifle, but when the season opened and the grouse boomed up and dodged behind a bush while the hunter was trying to get his sights lined up this dream fell through; but the "pipe" in which he indulged during the few weeks intervening between the death of the crow and hawk and the disillusionment with the ruffed grouse is often brought to mind when he reads statements so often made about planting the unerring bullet in the brain or heart and he has something of a fellow feeling for the writers and something of an appreciation of why and how they write, as the man who seriously considers the planting of the bullet in heart or brain of wild game with unerring certainty is in exactly the same category with the genius who wrote of killing the antelope every other shot at 1500 yards and told us how Capt. Casey made eighteen consecutive bullseyes on the 1000 yard target at a range of a mile. Such shooting is awfully easy to figure out but mighty difficult to land.

In conclusion, recurring to the woodchuck incident, I will say that a year ago last winter the same person whom I think my critic to be, then writing under a different name, published some articles in *Arms and The Man* in which he gravely ridiculed the absurdity of shooting woodchuck with a .25-35 rifle and defended a .22 long rifle as the proper weapon with which to dispatch them neatly and quickly.



Practical Advice on the Shotgun

By A. G. HOLMES

THIS article is brought out with the hope that it may lead to betterment as regards finish, style and safety of the guns before the public, for while the shotgun user has a large variety to choose from with their many developments, some armorers are still deficient when it comes to finishing their products, even in the better grades.

One picks up many a high grade weapon and in glancing along the barrels notes that the outside of the barrel has never been trued up. This is an eyesore to any shooter and such an arm should be returned at once to a manufacturer. The cost of a proper finish is trifling, but a number of manufacturers seem to think that the sportsman will overlook this fault.

One of the cheapest guns on the market today, however, makes a point to finish the barrel both inside and out apparently with the idea in mind that the sportsmen do want and will approve of this feature and consequently they have wonderful sales. So much for one item.

The repeating and automatic gun is here to stay and yet is subject to many refinements before they will meet the universal approval as a fine gun.

The repeating 16-gauge as made by one maker weighs more than their 12-gauge brush gun, which is a mistake. When a man buys a 16-gauge he is as a rule looking for a weapon lighter than a 12-gauge and one which he can handle with the greatest rapidity. It is not a trap gun, and hence should be built for the work it was intended and not as a makeshift. The manufacturer who puts on the market at the present time a repeating or an automatic shotgun of 16 and 20-gauge will make a fortune, but that gun must be built in proportion and not made on a great clumsy frame that has the appearance of a couple gas pipes fitted together by a man who knew no better or at best was experimenting. If the armorers of this country who are making the repeating guns (Remington, Winchester, Marlin and Stevens) would take the care to build the small bore gun as carefully as do Parker, Smith, Lefebvre and Ithaca, then and only then will the American public be satisfied to accept such a gun.

The small bore shotgun is on the threshold of a great wave similar to that of the small bore rifle a few years ago and many of the older shooters remember in the muzzle loader days

that the favorite guns were 14-gauge for large size and most of them smaller.

This is an age of improvement and the many who twenty years ago went afield with a ten-pound 10-gauge loaded with $4\frac{1}{2}$ drams black powder and $1\frac{1}{4}$ -ounce shot in search of snipe, chicken and quail today prefers to go afield with a 16 or 20 bore ranging from $5\frac{1}{4}$ pounds with 26 or 28-inch barrels to 7 pounds with the longer, 32-inch barrel, now coming into such universal use.

The days of the big heavy gun for any but duck shooting is past and even there the 12-gauge has been found capable of holding its own in general excepting such work as the open water shooting in battery and in long range shots on the pass or points where birds swing far off from shore, but I will touch on that farther on.

The 12-gauge is at present the trap gun and general utility gun ranging in weights from 6 pounds to $8\frac{1}{4}$ pounds, and lengths of barrels from 26 to 32 inches, but a great many shooters are looking ahead to another advancement by taking to the smaller bore weapons.

Pick up the magazines devoted to field sports and one will find that the trend is for the smaller gauge gun.

The better gun makers are working hard on the matter.

Take such companies as Parker Bros., Hunter Arms Company, Ithaca and Lefebvre, and they advertise the smaller gun and show that they have unbounded faith, in the future of the small bore gun.

The writer has handled and shot about every make of gun known that is manufactured in this country, and Europe, and finds that only a very few makers really consider the wants of the sportsman unless he absolutely forces them to build what he wants.

They say they can not fill their orders now; or that they never had such a call before; or a dozen of other reasons. If their business is so large, then they certainly must be up with the times and increase the capacity of their plant to take care of the demand, and as Americans use guns of all makes the man who will turn out what is wanted will be the man to get the business.

Being a crank on the subject of the shotgun the writer has tried out every good gun he might be able to get his hands on and has had many



THE AUTHOR WITH HIS AUTOMATIC IN ACTION

guns turned over to him for his study and opinion which surely has been an enjoyable pastime. How many of the readers have ever seen the different makes, let alone handling or owning them as made by the different makers throughout the world?

Little differences of bolt, action, finish, material, hang and balance and the too and one different things that go to make up the shotgun in its finest sense, have been seen and studied, their shooting qualities tried out with shells of all makes and all lengths from the most diminutive load to the heaviest load used for wildfowl and live birds.

As the age of black powder is about past with its guns bored larger than the gauge and the age of brass shells and the hammer guns is disappearing, we look forward to the improvements of the future and unless each year shows us something extra good we feel as though our gun manufacturers were not keeping up with the times.

The powder manufacturers have developed their products to a remarkable degree and yet we find bulk nitros that will not keep but a few months after being loaded without deteriorating badly, and yet it seems but a short time since the writer shot Ditmar, the first smokeless put on the American market and later the American wood powder which one had to drive into a solid mass before it could be depended on to do any work. Shells and primers have been improved until now one can buy the cheapest shell loaded with smokeless powder, steel lined,

made especially as a safety feature and to prevent breaking off when used in the automatic and repeating arms now so universally used by the great mass of shooters where rapidity and fast manipulation depend on the shell.

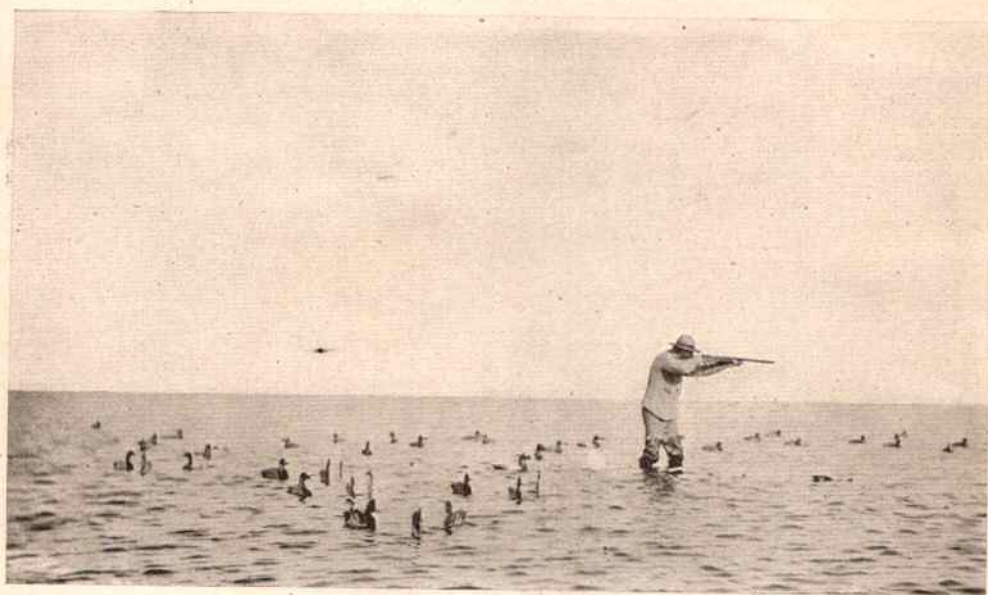
One can step into a gun store and listen to the conversation between shooters and the dealer and he wonders at the woeful lack of knowledge of the guns and ammunition they are using.

If they make one freak shot they have the most wonderful gun and the best load on earth, and if they miss a number of easy shots then the gun and ammunition are worthless. They are absolutely blameless and their arguments are convincing to themselves, probably.

The writer being brought up in a section of the country with a duck ground within a couple miles of his home naturally duck and snipe shooting have been enjoyed to an extent probably not realized by one one-hundredth part of the shooters of America and while hunting these two species of game it has been pleasant to watch the strides made by the younger generation in the sport and who have had the latest models to pick from and the latest improvements in shells and ammunition to select from.

In the matter of guns they should really come under different classes. The trap gun, the field gun and the duck gun.

The general utility gun, of course, is a 12-gauge of about $7\frac{1}{2}$ to $7\frac{3}{4}$ pounds weight with 30-inch barrels, one full choked and the other a modified choke or an improved cylinder, or, as



THE AUTHOR KILLING CRIPPLES ON GREEN BAY

many shooters now do, have an extra pair of barrels bored as they desire.

In the repeating guns two sets of barrels are very easily obtained at a nominal cost.

Still that is unnecessary for one can use a full choke gun and buy the brush or scatter loaded shells which will give good satisfaction in case but one gun is owned and is to be used for an all around weapon.

The trap gun, as used by the great number of shooters vary a good deal. One man uses and swears by his pump, another by his automatic, the next by his single trap gun and the next with his double gun, probably an ejector and possibly a single trigger with lengths of barrels ranging from 26 to 34 inches, but most being 30 and 32 inches.

The 32-inch barrel is favored by a great many as the longer sighting plane is a great help where one is nervous and liable to throw the gun off his bird from sheer nervousness and goose eggs are minimized by that means, while others claim it keeps them from shooting too quick. Whatever the reason may be for the difference in barrels lengths it is one that requires study, for many a man who could shoot a 32-inch barrel seems to handicap himself when using a shorter barrel and the man who handles the 30-inch barrel finds himself in the same predicament if required to use the 32-inch barrel.

A friend of mine, a quick snappy shooter, has had his greatest success with a 34-inch barrel gun on targets, while at live birds he does best with a 30-inch barrel. Different targets apparently require different weapons the same as

in the handicapping of shooters who are used to shooting at certain distance when required to move back find themselves uncertain as to what load or which gun and length of barrel they had better use.

This is especially true when shooting live birds for here the target; an object getting away with all the power possible must be centered as quickly as possible, for every yard away from the trap means that much more speed and distance and danger of carrying the load over the boundary.

The writer once owned the old Greener gun which E. D. Fulford made his great record of 199 out of 200 birds with one dead out of bounds and this gun was an even shooting weapon handling heavy loads exceptionally well but was not an extremely close shooter and from guns the writer has seen, used, owned and tried, found that the gun for live pigeons should not be such an extreme close shooting weapon as much as it should be an extremely even shooting weapon capable of making one pattern like another leaving no opening in the load for a pigeon to get through. Such a gun should shoot with comfort $3\frac{1}{2}$ drams bulk smokeless and $1\frac{1}{4}$ ounces No. 7 chilled shot making an even spread with extra good penetration.

Most trap guns are made with a drop of stock well under $2\frac{1}{2}$ inches; preferably 2 to $2\frac{1}{4}$ inches and long in the stock, and as a rule weigh from $7\frac{1}{4}$ to 8 pounds.

No man can shoot a gun that pounds his shoulder and raises up hitting him on the cheek bone now and then and do good work, hence



A CHESAPEAKE DOG AT WORK

in trap work the shooter should pick out a load that is snappy, without any perceptible recoil that will make a uniform pattern, and if a new beginner it is better that he should start using the lighter loads, say $2\frac{3}{4}$ or 3 drams powder and $1\frac{1}{2}$ ounce No. 7 $\frac{1}{2}$ shot and later increase his load to $1\frac{1}{4}$ ounce with whatever powder loads he finds best fitted to his gun. One powder may not be as satisfactory as another, and one load may not handle in one particular gun as well as some other load might, so it is always best to try different loads and then settle on one and stick to it.

Lots of my friends will laugh at this, as I am continually trying the new things myself and do not live up to these teachings as I would have others do, but then some of the shooters are not following the different new ideas as closely, nor do they experiment.

As regards the stocking of guns for trap work the straight stock is always spoken of, being the best for such work, not filling the hand, but as far as the writer has ever been able to discern by careful study, could never really see where any difference came in between the straight, the half pistol and the full pistol grip.

Possibly with extreme heavy loads one might find a straight grip easier to hold tight if the gun was recoiling heavily but of that I am not sure as I have shot the heaviest loads out of guns made by the same manufacturer, bored and weighing the same and with same drop and length of stock and the only difference being in the grips and am not able to say the difference was noticeable.

So many pistol grips are seen that are mere makeshifts and why in the world they are ever put on guns is a mystery as they look and feel like nothing they were intended for.

A pistol grip in its right sense is one that is made similar to the old fashioned muzzle loading single barrel cavalry pistol of our forefathers and is so made on some guns, but as made by many of our own makers in America the end of the cap is farther back on the stock than the comb above.

Mr. Crossman shows the cut of a stock on his new Springfield Rifle in the December issue of what a full pistol grip is and if it were made as a half pistol grip the cap would be done away with and that part rounded off as in the old cavalry pistol above mentioned. Pick up a gun with a grip made properly, say 4 to 4 $\frac{1}{2}$ inches from cap to trigger, and then one of the makeshifts that run 5 inches to more than that, and it will not take one long to note the difference.

The ordinary pistol grip is not satisfactory as it does not properly fit the hand and yet it fills up part of the hand and a good grip is not to be obtained as the hand slips up and down while if the shooter had a straight grip or a good pistol grip there would be no changing the hand up and down the stock trying to find some real steady position. This can be illustrated by going into a large gun store and trying a number of the different makes of guns that show the varieties of grips mentioned.

Another thing that many manufacturers overlook and that is the shape and heights of the comb above their grip and the thickness.

A comb had better be made quite heavy rather than thin but most makers put on a thing with an edge like a shingle for one cheek to rest on which is a great mistake.

Some of the repeating guns have good heavy combs and fit well in that respect.

The butt of the gun should never have a toe of any amount but should set square appearing quite flat. The recoil is less noticeable when the entire butt is square to the shoulder and does not slip down under the armpit if one is shooting at a high flying incomer.

Good Word for the Twenty-Gauge

By CHARLES G. WILLIAMS

I SEE so many inquire in the Outer's Book in regard to 20-gauge guns that, as I am getting to be a genuine crank on 20-gauge shotguns, I will give my experience.

In the fall of 1906, as my seven and a quarter pound 12-gauge Ithaca was too heavy and my Remington auto was no better, and as the recoil of both was too severe, I saw I would have to "do" something if I continued to have my wife for my partner in my joys as well as my sorrows, so I bought her a No. 1½ Ithaca, 20-gauge, 26-inch barrels, both full choke.

We were in Colorado at that time and from where we lived I could go out in the morning, get two or three ducks and get to my work in time, and you can bet my wife enjoyed those morning trips as well as I did. It was not long before I was taking the 20-gauge out when I went alone and the hang, shooting qualities, etc., of that little gun 5¼-pound found a place in my affection at once. I found out right away that I could get game as far away as with either of my 12-gauge guns, and the light weight, light load of shells (for thirty 20-gauge shells weigh just one pound less than thirty 12-gauge) made it more of a pleasure to go on a long tramp, for it did not seem like a cannon by the time I got home. When it came to targetting that gun, I bought shells loaded with Ballistite, Infalible, Deadshot, and DuPont powder with seven-eighths of an ounce of 7½-chilled shot in each case. I found out that I could do better—that is, make an even and better pattern with Ballistite, sixteen grains, than any other load, and it did not seem to kick so bad either. I counted (so my note book says) 232 to 248 pellets in a thirty-inch circle at forty yards with twenty-five shots, alternating right and left barrel, and with Du Pont I got as low as 202 pellets with the right barrel, with 244 as high score.

Many times the boys geyed me about my toy gun, only to change their tune when they saw how it would shoot and get game. I have some scores of 10 straight over the trap, not taking the handicap of four yards that the 20-gauge is entitled to, but shooting from scratch. To tell the truth, I wanted that little gun so bad

that I decided to get another and better one, for my wife; and while I was about it, a lighter one. Last March I ordered a No. 2 Krupp from the Ithaca Company, 20-gauge, 5¼-pound, 24-inch barrels, both full choke.

I did not get it soon enough, for my wife to use it, for she died before it came, but I will always remember the pride and enthusiasm she showed when she spoke of the new 20-gauge she was going to have.

I got the new 20-gauge in June and immediately tried it out on targets. I could only get shells loaded with 16 grains Ballistite, or 2¼ drams Du Pont, seven-eighths of an ounce of No. 7½ chilled shot, so I tried both. In only one case did I find as low as 226 pellets in a thirty-inch circle at forty yards, and I found as high as 256. As for penetration I found plenty of shot that went completely through a one-inch soft pine board and some that only stuck in the wood, and I don't know of any 12-gauge that could do better. I am using the "new" 20-gauge now and got nine squirrels with nine shots, twelve rabbits with fifteen shots, and I also got the only two ducks I have seen this fall with three shots, which is not so bad for a scrub. I do not know either the free recoil or the muzzle velocity per second, but that can be had from the makers at the cost of a two-cent stamp. I would like to try my 20-gauge against a 16-gauge just to see how they compare, and some day I may do so, but I doubt if any larger gun will ever look right in my eyes after using the two 20-gauge as I have during the last four years.

There is only one thing I would like to caution "new" users of the 20-gauge. If you are naturally quick shots with the heavy guns, look out, or you will shoot too quick with the 20-gauge, and the men who are shooting behind their birds will find that they will shoot quicker with the 20-gauge and will get more game. Anyone will shoot a great deal quicker with the 20-gauge than with the larger gauges, on account of the shorter barrels and the light weight, so much so that at the beginning one may fall off in scores and kills, but a little perseverance will remedy that as I found from experience.

Self-Loading Arms

PART V

By THE GUNNER

REMINGTON AUTO-LOADING RIFLES

THE Browning system, as applied to these rifles is that of a recoil operated action with locked breech. The barrel is solidly locked to the breech bolt, until after the bullet leaves the muzzle and recoils in a straight line, in the barrel jacket. As the barrel and bolt must recoil together over three inches before unlocking takes place and as numerous tests have fixed the amount of recoil, before the bullet leaves the barrel, as $\frac{1}{4}$ -inch to $\frac{3}{8}$ -inch, it is seen that there is practically no loss of energy through the self-functioning action.

These rifles are made in .25, .30, .32 and .35 Remington calibers with identical mechanisms in the various sizes, difference being found only in dimensions to suit the large or small calibers.

The loading is accomplished with stripping clips, holding five shells, or by hand, one at a time.

As the actions are similar, a description will be given as applying generally to the various sizes and the tables of data will be combined.

GENERAL FEATURES

Length of barrel, 22 inches; length of rifle over all, 36 inches. Weight of rifle $\frac{7}{8}$ pounds. Number of shots, 5. Type action, recoil operated with locked breech, sliding barrel, take down; type magazine, single column, clip-loading box. Trigger pull, $\frac{1}{2}$ to 3 pounds. Sights, regular, steel bead front dovetailed in block brazed to barrel jacket; sporting, rear, screwed to barrel jacket. Optional—any style front to dovetail, various special rear barrel-sights to screw; Lyman receiver and Marble or Lyman tang sights. Finish, standard, plain blued; stock, straight or pistol grip, plain walnut, rubber shot gun or steel rifle butt plate. Price, standard, list \$30.00; net approximately \$25.00. These arms are also made in a number of attractive special grades from \$40 list to \$140 list, having fine checked and carved stocks and engraved metal parts. Sling strap may be fitted for \$2.00 extra, to any grade.

BALLISTICS .35 REMINGTON CALIBER

Diameter of bullet, .358 inches; diameter of head of shell, .422 inches; length of bullet, .910 inches; length of cartridge complete, 2.525 inches; weight of bullet, 200 grains; weight of powder, 32.5 grains; weight of cartridge complete, 405 grains. Type of bullet, either full patch or soft point; kind of powder, L. & R. Lightning. Muzzle velocity, 2000 foot seconds; muzzle energy, 1776 foot pounds; penetration, soft point, thirteen $\frac{1}{4}$ -inch pine boards; penetration, full patch, thirty-two $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1645 foot seconds; remaining energy at 500 yards, 1202 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.40 inches; 300 yards range, height at 150 yards, 16.60 inches; 400 yards range, height at 200 yards, 36.40 inches; 500 yards range, height at 250 yards, 65.58 inches.

.32 REMINGTON CALIBER

Diameter of bullet, .320 inches; diameter of head of shell, .422 inches; length of bullet, .910 inches; length of cartridge complete, 2.525 inches; weight of bullet, 165 grains; weight of powder 26 grains; weight of cartridge complete, 315 grains. Type of bullet, either soft point or full patch; kind of powder, L. & R.

Lightning; muzzle velocity, 2057 foot seconds; muzzle energy, 1550 foot pounds; penetration, soft point, twelve $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-one $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards 1600 foot seconds; remaining energy at 500 yards, 938 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.79 inches; 300 yards range, height at 150 yards, 15.76 inches; 400 yards range, height at 200 yards, 33.44 inches; 500 yards range height at 250 yards, 62.68 inches.

.30-30 REMINGTON CALIBER

Diameter of bullet, .306 inches; diameter of head of shell, .422 inches; length of bullet, .980 inches; length of cartridge complete, 2.525 inches; weight of bullet, 170 grains; weight of powder 24 grains; weight of cartridge complete, 310 grains. Type of bullet, either soft point or full patch; kind of powder, L. & R. Lightning; muzzle velocity, 2020 foot seconds; muzzle energy, 1540 foot pounds; penetration, soft point, eleven $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-two $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1580 foot seconds; remaining energy at 500 yards, 943 foot pounds. Trajectory: 200 yards range, height at 100 yards, 5.74 inches; 300 yards range, height at 150 yards, 15.21 inches; 400 yards range, height at 200 yards, 31.56 inches; 500 yards range, height at 250 yards, 57.12 inches.

.25 REMINGTON CALIBER

Diameter of bullet, .257 inches; diameter of head of shell, .460 inches; length of bullet, .963 inches; length of cartridge complete 2.525 inches; weight of bullet, 117 grains; weight of powder 23 grains; weight of cartridge complete, 265 grains; type of bullet either soft point or full patch; kind of powder, L. & R. Lightning; muzzle velocity, 2127 foot seconds; muzzle energy, 1175 foot pounds; penetration, soft point, eleven $\frac{1}{4}$ -inch pine boards; penetration, full patch, forty-four $\frac{1}{4}$ -inch pine boards; accurate range, 500-700 yards; remaining velocity at 500 yards, 1650 foot seconds; remaining energy at 500 yards, 707 foot pounds. Trajectory: 200 yards range, height at 100 yards, 4.95 inches; 300 yards range, height 150 yards, 13.77 inches; 400 yards range height at 200 yards, 28.12 inches; 500 yards range, height at 250 yards, 54.51 inches.

The mechanism of the Remington auto-loading rifle is rather harder to divide and classify than the Colt pistols, which were treated in a former article. The Remington is very simple and yet the various parts are so closely allied in their functioning that it is hard to separate them suitably for a description of the "works." For convenience sake, the parts will be taken as follows: barrel, barrel jacket and forestock, breech bolt carrier and breech bolt, magazine, receiver, lock and buttstock.

To the breech end of the barrel is permanently fastened a barrel extension, in which are locking grooves which engage the locking lugs on breech bolt to hold breech closed, slots for the extractor and the barrel locks to work in, guide notches for front of bolt carrier and a clearance cut for the bolt lock cam rib in receiver. Near the forward end of barrel is a thread on which is screwed the barrel nut, which takes the thrust of the recoil spring. The rear end of barrel is fitted to slide in the barrel jacket

and the front end, to slide in the jacket bushing. The barrel jacket has permanently fastened, to its rear end, the jacket head. In the rear face of this head a shoulder is machined, which fits snugly into the front end of receiver. Just under the jacket there is a hole through the head in which is the take-down screw and its lever. On the under side of jacket, forward of the take-down screw lever is a small lug into which the forestock screw is turned, to hold stock to jacket. On top of jacket, near rear end, the rear sight is fastened by means of two small screws. In the front end of jacket is a thread for the jacket bushing. Inside the jacket is a small shoulder which engages the buffer spring and also takes the thrust of recoil spring. These parts are shown in the sectional cuts, Fig. 25. The forestock is fastened to the under side of jacket by the forestock screw. The stock is mortised to fit against the jacket head and has a recess for the take-down screw and lever.

The breech bolt has on its front end a head in which is a recess, to fit over the flange of the cartridge case in chamber of barrel, a groove

The receiver contains and houses the bolt and carrier, the lock parts and the magazine. The receiver has, in the front end, a hole shaped to fit the barrel jacket head. There is a lug formed in bottom of front of receiver into which the take-down screw turns and which has notches in its back to hold the magazine and trigger plate. In top of receiver near the front is a port through which the magazine is loaded and the shells ejected from chamber. The back of this port is shaped to hold the loading clip when charging the magazine from a clip. In the right side of receiver is a slot in which the action operating handle works. Just back of this slot is the safety lever, which has a rocker inside the receiver which locks the trigger and the bolt when in "on" position. In the left side of receiver is a rib which cams the bolt lock cam pin when functioning. The rear end of receiver is extended to form a tang, for the fastening of the butt stock. In this tang is a tube which contains the action spring and follower, which presses the link, bolt, etc. On the left inside of receiver are hung the barrel lock, bolt carrier latch and magazine indicator, with its thumb



THE REMINGTON AUTO-LOADING RIFLE, NO. 6 GRADE

to hold the extractor and which has integral with it the two locking lugs. Through the bolt, longitudinally is a hole for the firing pin. Near the center, lengthways, of the bolt are cut slots, spiral cam shaped, which impart the turning motion to lock the bolt, in action. These slots engage the bolt cam pins in the bolt carrier.

The bolt carrier surrounds and contains the bolt; only the head of bolt projecting forwards from carrier. In the top of the carrier is a slot which contains the extractor. In the right side of the bolt carrier, near the front end is a slot in which the operating handle locks. In the left side of bolt carrier is a groove in which is the bolt lock and in which slides the bolt lock cam rib, of receiver. Projecting forward from bolt carrier are lugs which engage corresponding notches in the barrel extension and guide the bolt locking nuts. In the bottom of bolt carrier is a small notch which engages the bolt carrier latch in functioning. In the back of bolt carrier at the bottom is a recess in which is pinned the link. The bolt carrier has in its sides the bolt cam pins.

piece. In the bottom of receiver is fastened the trigger plate, which contains the hammer and hammer spring; trigger and trigger spring, and holds the magazine. The hammer has a small lug projecting from its back side in which are two notches which engage the hooks of the trigger in functioning.

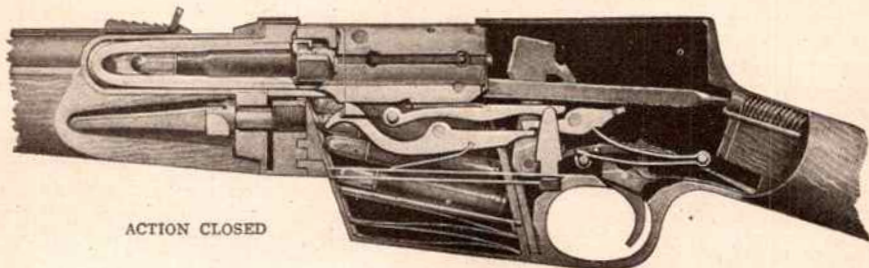
As the hammer is cocked by the bolt carrier the notch at the back of the lug engages the hook at back of trigger. When the trigger finger releases pressure on the trigger, the trigger spring swings the trigger so that the front notch and hook engage, when another pressure on trigger by finger will fire another shot. The magazine contains the magazine spring and follower.

The action in firing proceeds as follows: Starting with the rifle unloaded, the safety is pushed "off" or down, the operating handle is pulled back until the bolt carrier locks, a clip of shells is introduced into the port in top of receiver and the shells pressed down into the magazine. Or the magazine may be filled one shell at a time. The operating handle is given

a light pull and allowed to go forward, chambering a cartridge and leaving the hammer cocked. Pulling the trigger allows the hammer to fall, strike the firing pin and detonate the primer. The recoil of discharge starts the barrel, bolt, carrier, hammer, etc., back against the pressure of recoil spring, action spring and hammer spring. This recoil proceeds only about $\frac{1}{4}$ inch before the bullet leaves the barrel. The bolt remains locked to the barrel until the limit of rearward recoil has been reached, by which time

until the magazine is empty, when the bolt remains open. The magazine being charged, the operating handle is drawn back and allowed to go forward again, loading and cocking the arm.

As the barrel, bolt, carrier, etc., move back at discharge, the bolt lock cam rib of receiver allows the bolt lock to engage the bolt, so that bolt will not rotate in carrier as long as breech is open. As bolt and carrier go forward reloading and locking breech, the cam rib releases



the hammer has been cocked. As the barrel and bolt recoil, the front end of barrel lock rises and the rear end being depressed allows the bolt carrier latch to swing into engagement with notch in bottom of bolt carrier. The energy of recoil being spent, the recoil spring pushes the barrel forward, drawing the bolt forward in carrier, turning it through the office of the cam-slots and cam pins and unlocking it from barrel extension. The empty shell remains in the grasp of the extractor until the barrel is forward, when the ejector kicks it out. The magazine spring feeds up another cartridge. As the barrel reaches its forward position it

bolt lock so that bolt may rotate into locked position when it seats into the barrel extension.

When it is desired to cease firing the safety is set, or pushed up, locking the mechanism. If it is desired to refill a partly empty magazine, the safety being off, the operating handle is pulled back and the shells pressed into magazine until full when the operating handle is released and loads the chamber by going forward.

The trigger is balanced, so that the action will not "jar off" if the arm is dropped. The action is so nearly instantaneous that the trigger can not be released and pulled again before functioning is complete.



throws the barrel lock down, releasing the bolt carrier latch and allowing bolt and bolt carrier to move forward under pressure of action spring. The bolt seats the cartridge and under action spring pressure, rotates into its locked position, its lugs engaging the notches in the barrel extension. The hammer having been left in the grasp of the hook at back of trigger, comes into engagement with the one at front as soon as the pressure of finger on trigger is released. The action is now ready for repeated firing

To take the arm down, see that breech bolt is closed, unscrew the small fore-stock screw and take fore-stock off barrel jacket. This exposes the take-down screw. The lever of take-down screw is turned out and the take-down screw unscrewed. The barrel jacket is then pulled from the receiver and the fore-stock screwed to the jacket.

To assemble, take fore-stock off jacket, draw operating handle back till bolt carrier catches, insert barrel extension into receiver, press jacket

head to its seat and screw home take-down screw. Push bolt forward in carrier so lugs are in position, press down magazine indicator thumb piece and close breech gently. Be sure bolt is fully forward in carrier as the locking lugs will not enter slots in barrel extension unless bolt is in this position.

With the arm taken down and hammer cocked, to remove bolt and carrier from the receiver, pull the operating handle back a short distance and holding bolt back with one hand, pull out the small pin in the operating handle and push operating handle forward out of bolt carrier with the other hand. Then bolt and carrier can be withdrawn from receiver.

Raise front end of extractor and pull it forward away from bolt and carrier.

Push out firing pin lock pin and remove firing pin. Push out two bolt pins and separate bolt and bolt carrier. Take out butt stock screw and remove butt stock. Take out trigger plate pin and screw and remove trigger plate which

contains hammer and trigger mechanism. Turn down safety to right angle with receiver, push out safety from left side and take out rocker. Take out bolt carrier latch spring, barrel lock, bolt carrier latch and magazine indicator.

Replace an inverse order, being sure that magazine indicator spring enters its slot in receiver and that front end of bolt carrier latch is over rear end of barrel lock.

To remove recoil and buffer spring, unscrew barrel nut, withdraw barrel, unscrew jacket bushing and take out recoil spring, buffer spring, spring case and washer.

To replace, slide barrel into jacket put in buffer spring, spring case (flanged end down) recoil spring and washer (serrated side up). Push washer down, screw down barrel not tightly and screw jacket bushing home.

The hammer, trigger and magazine mechanisms can be dismantled when trigger plate is taken out of receiver.

Answers to Correspondents

HOW TO PURCHASE A "KRAG"

A valued correspondent who has the welfare of the shooting fraternity at heart, sends us the following letter from the U. S. Ordnance Department which is self explanatory. Through the information published in an earlier issue of the Outer's Book many of our readers have received Krag rifles or carbines from the U. S. Arsenal and in every instance reported the arms received were satisfactory.

SIR:—

1. Replying to your letter of November, 1910 (O.O. 37152-3377), relative to obtaining obsolete arms, I am directed by the Chief of Ordnance to inform you that this department is authorized to sell to individuals, for their personal use, a limited number of U. S. magazine rifles and carbines, caliber .30, model of 1896 (Krag-Jorgensen), cleaned and repaired, at a price of \$6.00 for the rifle and \$5.00 for the carbine, plus the cost of the appendages and packing, which is 25 cents for the former and \$1.15 for the latter, for each arm.

2. Before the department, however, can authorize the sale of one of these arms, it will be necessary for you to furnish assurance that the arm is for your own personal use, and will not be disposed of in future, either directly or in-

directly, to other parties. This assurance can be given by the congressman from your district, one of the senators of your state, or the mayor of your home city. Your application should also be accompanied by New York draft to cover the value of the arm, appendages and packing.

3. These arms are not new, but are cleaned and repaired, as stated above, and in every respect serviceable.

4. This department has no blank forms to be filled out for the purchase of these arms.

A BOY'S RIFLE

EDITOR GUN DEPARTMENT: In writing this brief letter I am keeping in mind the fact that the average boy does not want an air rifle, neither does he want a cannon—he wants something "betwixt and between" as the saying goes, and basing my judgment on my experience with rifles, the gun to fill the bill is the Hopkins and Allen single shot with lever action, octagon barrel 24 or 22½ inches in length, positive ejector, "take-down" system, and many other special features. This gun lists, I think, in the United States for only \$6.50 and is a great improvement over some other single shot small bore rifles. It is made in calibers: .22 long

rifle, .25 Winchester, .32 long, .38 Smith & Wesson giving, as any one may see, a desirable list of accurate small bores. My choice of calibers is without doubt the .32 long cartridge, it is the most powerful of the four, is very cheap and has a range of from one hundred and fifty to two hundred yards.

Now a word as to the action of this little arm. The breech block slides vertically up and down as in the Winchester single shot, and the ejector sends the shell flying out with a "click" that is good to hear. The hammer at all times rests in the safety notch, thus making accidental discharge impossible. For those who admire the "take-down" system, this rifle is one of the neatest of them all. The forearm does not protrude on each side of the frame as in some others I have seen, but is flush and even. The sights are Rocky Mountain rear and bead front, making a perfect combination. The stock slides easily to the shoulder and there is a feeling of buoyancy and balance to the whole arm. I will close by saying I am not an agent of the Hopkins & Allen Arms Company, but I own one of their excellent rifles and feel it their due to have it praised. Yours,

A. B. G.

THE SHARP'S RIFLE

EDITOR GUN DEPARTMENT: I herewith submit the following list of questions to the answers to correspondence section of your excellent journal, and hope to have them answered in an early issue. Where was the Sharp's rifle manufactured? Is it still made, if so, where can it be obtained. Please explain the type of action of the Sharp's rifle. In your opinion is the .45-70-500 or the .45-70-405 as powerful a black powder cartridge as can be obtained or are they like the .44-40-200 falling gradually into disuse? Is the Lee-Remington rifle still made by the Remington Arms Co.? What kind of a rifle was the old Spencer? Was it accurate, and also please describe the Ballard rifle briefly. Yours, A. B. GEILKE.

[The Sharp's rifle was manufactured by several firms and in different cities. So far as our information goes, the Sharp's rifle was invented by Christian Sharp and was at different times and dates made at Philadelphia, Pennsylvania, Hartford, Connecticut, Chicopee Falls, Massachusetts and at Richmond, Virginia. Over 90,000 Sharp's Rifles of different models were purchased and used by the United States Government during the Civil War. Sharp's arms were also used by United States troops in the war with Mexico as early as 1845. It is no longer made, but many are still in use. It may be purchased in various models from Francis Bannerman, No. 501 Broadway, New York

City. The type of action of the regular Sharp's rifle is the falling breech block, which is operated by a lever under the stock, which also forms the trigger guard.

The .45-70 cartridge with bullets varying in weight from 230 to 500 grains is still much used by big game hunters. Black powder cartridges of .45 caliber, containing from 60 to 125 grains of powder and from 300 to 550-grain bullets may still be obtained from the Winchester and U. M. C. Companies. These, like the .44-40-200 and other excellent cartridges that have served us well, are gradually being displaced by smokeless cartridges of smaller caliber and greater energy, range and penetration. The Lee-Remington is not being manufactured in quantities at present, but may be obtained from the Remington Arms Company, or any of their agencies. The Spencer rifle was one of the first successful repeating arms made in America. It was a seven-shot arm, lever action, with a tubular magazine located in the stock, from which the cartridges were fed under pressure of a spiral spring. The arm was accurate, but necessarily of rather limited range as the cartridge was short with a bullet heavy in proportion to the powder charge. It was of 56 caliber and a rimfire. The Spencer was made by the Spencer Repeating Arms Company, Boston, Mass. About 95,000 of these arms were in the hands of Federal troops at the close of the civil war.

The Ballard was a single shot arm, the invention of C. H. Ballard. It was made by the Ballard Arms Company, Fall River, Mass., later by the Marlin Repeating Arms Company, New Haven, Conn., under whose hands it became one of the most famous single shot, long and mid-range and hunting arms ever developed in any country. It is no longer made but is still greatly in demand among target shooters.—R. A. K.

FOR THE .22 COLT

EDITOR GUN DEPARTMENT: I see there is considerable complaint in the sportsmen's magazines about shells sticking in Colt's .22 caliber target revolvers. I think this is caused by the tight crimp on the shell, more than any thing else. I have one of these revolvers and had 100 of the .22 W. R. F. cartridges on hand that were made soon after the Winchester Arms Company brought out their Model 1890 rifle. These shells are loaded without crimp and do not expand or bother in extracting. I believe they could be loaded with a higher grade of powder when not crimped. They should not be heavily crimped for revolvers and single shot rifles. I find that the Colt's .22 caliber revolver shoots more accurate than I can hold it. I am living in hope that the Smith & Wesson Company will put out their Model 1891 single action revolver

in .22 caliber rim fire; the cylinder of this revolver is so quickly removed that one could have an extra cylinder at small cost and use all of the .22 rimfires on the market, except the automatic, if the manufacturers would make the bullet for their .22 extra long with a longer heel, make it weigh 45 grains, and use a high grade of powder, it would give good results in revolvers. Yours truly, F. P. RHOADS.

[I am inclined to think the successful working of the old W. R. F. shells, as described by you, is due to the fact that the shell metal is slightly heavier or harder than that of the shells made at a later date. Not all of the shells of recent make give trouble, nor all of the shells of any particular make, but some batches of almost every make will swell and stick. I believe your scheme of having two cylinders, one chambered for the W. R. F. and one for the common .22 short, long and long rifle could be made to work in both makes of arms and it would be a very simple matter to effect a change in the cylinder of the S. & W. if as you say it were made in single action model 1891.

I have recently received letters from shooters in different parts of the country, recommending the use of Peters Cartridges in the .22 revolvers. It is claimed by those who have given them a fair test that no trouble whatever has been experienced either with black, smokeless or semi-smokeless in any of the Peters .22 caliber cartridges in the new arms. Information also comes to us that .22 caliber cartridges of any make or size, loaded with the new "Lesmoke" powder are giving perfect satisfaction in the new .22 revolvers.—R. A. K.]

HIGH POWER RIFLES

EDITOR GUN DEPARTMENT: Do you consider the '95 Model Winchester as accurate as the New Springfield, when used with the 1906 Rimless? Which in your opinion is best for a hunting arm? Of course, we are now able to get the Winchester in take-down, and it is possible to use a telescope on top, we have done so at times on the .30-40 Winchester, and where possible we prefer a sight mounted on top. Does the Rimless show better accuracy than the .30-40 when pointed bullets are used in actual tests? Trusting you are in a position to answer these questions. Very respectfully yours, M. E. THAYER.

[There can be no material difference in the accuracy of the New Springfield and the model 1895 Winchester when both are chambered for the 1906 ammunition; both have the same length of barrel (24) and both are now bored the same diameter (.308). Whatever difference in accuracy might develop in a test in which all

personal equation of the marksmen were eliminated, would be due to structural differences of breech action and locking mechanism, as well as the speed of the firing mechanism. The New Springfield breeches up snugly with a cam purchase, is locked symmetrically by lugs on each side of the bolt, which gives direct unyielding pressure against the force of the explosion. It is an established fact that a bolt locked with but one lug does not do this, and although the errors of muzzle delivery caused by these peculiarities are constant, and may be corrected by the sights, yet they do exist. The Krag has but one locking lug and it was found that there was a drift tendency of the bullet between the muzzle and the 200 yard target, that did not appear in arms of the same type locked by two or three lugs. The lock action of the New Springfield is shorter and quicker than the Winchester Model 1895, causing quicker and stronger ignition with the same ammunition. These are all hair splitting differences that would never be discovered by the average man. In my opinion they might all be ignored in the choice of a rifle for hunting if the favored arm was otherwise satisfactory.

Answering your question direct, the New Springfield should show the greater accuracy for the reasons given. Either arm will show greater accuracy than any one not an expert can get from them. The Winchester Company makes an excellent scope for their model 1905 and the Stevens Company is making one for the New Springfield. The .30 Rimless with any form or weight of bullet will show superior accuracy, range and energy to the .30-40 with any bullet at any range, although the latter is very satisfactory. The superiority of the .30 Rimless is more apparent as the range increases. As to which is the better hunting arm, if you wish an arm for big game and favor a lever action, there is no better than the Winchester Model 1895, taking the 1906 ammunition. If you would prefer a bolt action, I would heartily recommend the Sauer-Mausier chambered for the same cartridge. It has three locking lugs —R. A. K.]

TO LOAD CAP AND BALL

EDITOR GUN DEPARTMENT: I am a regular subscriber to Outer's Book, and having noticed that other subscribers are having questions answered courteously through the Gun Department, I am encouraged to ask one myself. Can you tell me the method of loading the cap and ball army revolver? I have one, a fine old Remington .44 caliber, for which I have purchased bullet moulds, but they appear to be too large. The bullets will go into the chambers and breech of the barrel but will not go into the muzzle of the barrel; this is without a patch, and I always thought they should be loaded the

same as a muzzle loading rifle. Are the bullets too large or are they purposely made that way? Is the above named revolver accurate, and if so, for what distance. Yours,

H. W. RODGERS.

The mould described by you is the correct size for your .44 cap and ball Remington revolver. Chambers are bored slightly larger than the barrel to facilitate loading, and to make the bullet take the rifling. The barrel is throated at the rear end to ensure entrance of the bullet from the chamber without shaving. To load these revolvers a pocket powder flask, having a small charger that would measure the exact charge was used. The weapon was placed at half cock and held muzzle up, butt to the front. A charge of powder was then poured from the charger into the exposed chambers on the right-hand side in succession until each chamber contained its powder charge. The bullets were then placed in the chambers in the same manner, each being pressed home as it passed under the hinged rammer. Another method was to make paper cartridges, similar in design to those used in the old muzzle loading muskets, by which the process of loading was somewhat simplified and less time consumed. It is possible that you may be able to purchase some of these cartridges of Francis Bannerman, No. 501 Broadway, New York City. No patch or wad is required in reloading these arms. If your mould makes conical grooved bullets you will find that to lubricate them with pure tallow will improve the shooting. Wipe off all surplus lubricant from the sides and base of the bullet before loading. Many, in fact most of the old Colt and Remington cap and ball revolvers are extremely accurate at pistol shooting ranges, although they will shoot well much further. Use only black powder in these arms and waterproof caps. You might be able to purchase one of the original powder flasks from Bannerman. —R. A. K.]

A MATTER OF CHOICE

EDITOR GUN DEPARTMENT: I intend to buy a rifle of .32-40 caliber and my choice lies between the Model 1894 Winchester, and the Model 1899 Savage. I wish to use the .32-40 black powder cartridge for target work and hunting on the farm, as it is reloadable and cheaper, but I would like to be able to use the .32-40 high power smokeless in case I might make a trip after big game. Will the Savage with its barrel bored for the .32-40 high power smokeless do good work with the black powder cartridge, or will the lead bullet foul the barrel? What is the velocity and energy of the .32-40

high power smokeless as compared with the .30-30 and .32 U. S.?

Would the .32-40 Winchester high velocity cartridge be powerful enough for black bear, mountain lions or deer? How does the twist of the rifling of the Savage compare with the Winchester? Yours,

H. D. P.

You could make no mistake in purchasing either the Winchester Model 1894, or the Savage Model 1899 for the work outlined by you. Both rifles, when chambered for the .32-40 cartridge, are rifled with a 16-inch twist. The only change that will be necessary to have made to shoot the high power .32-40 cartridges is, when ordering, specify that the barrel must be made of smokeless or high pressure steel. When the barrels are made of the latter materials, black powder and lead bullets, or smokeless powder with full or half mantle bullets may be used, the twist being the same. Lead bullets will not foul as the 16-inch twist was originally designed for them, but they should not be used with the high pressure smokeless powder.

The .30-30, the .32 special and the .32-40 compare as follows: The .30-30 with 160-grain full or half mantle bullet has a muzzle velocity of 1925 foot seconds, muzzle energy of 1316 foot pounds. The .32 special, like the .32-40, also has a 16-inch twist, with the 170-grain full or half mantle bullet, it has a muzzle velocity of 2050 foot seconds, muzzle energy of 1585 foot pounds. The .32-40 with the 165-grain full and half mantle bullet has a muzzle velocity of 2065 foot seconds and muzzle energy of 1338 foot pounds.

These results are obtained with high power smokeless powder. There is practically no difference in the ballistic performance of the three cartridges in the high power loads, and the same is true of the .32 special and .32-40 with either black or smokeless loads, but on account of being better adapted for reloading, the .32-40 is in every way preferable.

The mechanisms of both Savage and Winchester rifles are strong and reliable. As you wish to use the arm for target work and will reload your cartridges, I would recommend the Savage. I believe the revolving magazine is adapted for your purpose, as it would not always be necessary to crimp the shells when loaded with black powder for target work. It would be necessary to do so if using a rifle with a tubular magazine you will find the .32-40 with high power ammunition heavy enough for any game in the United States. The .32-40 is one of the most accurate rifles made. There are slight differences in the cartridges for these rifles as loaded by different makers.—R. A. K.]

The Duffle Bag

A TENT NOVELTY

It has remained for the H. W. Johns-Manville Company to solve a problem that has bothered thousands of sportsmen and scores of tent makers—the problem of removing all danger of fire from a camp stove pipe. The Johns-Manville Company are the great asbestos manufacturers of this country and if there is anything that could be made of asbestos and is not made by them it is something not yet invented. This latest idea is so simple it is a wonder it was not thought of years ago. It is an asbestos grommet or collar inserted in the roof of a wall tent or the night cap of a Sibley tent through which the pipe passes. The grommet is attached to a piece of asbestos cloth which is fastened to the roof, and if one cares to go to the expense the asbestos cloth can be extended to cover a considerable part of the roof as a protection against sparks. The grommet fits tightly around the pipe so that rain cannot get in or warm air get out, and being flexible it folds as readily as the canvas, in which respect it has a great advantage over the tin protector. As you will see by the company's advertisement in another place in this issue, it has branches in all the large cities. The home office is 201-231 Clybourn Street, Milwaukee. When writing for a descriptive circular and prices please mention the Outer's Book.

INFORMATION ABOUT TANNING HIDES

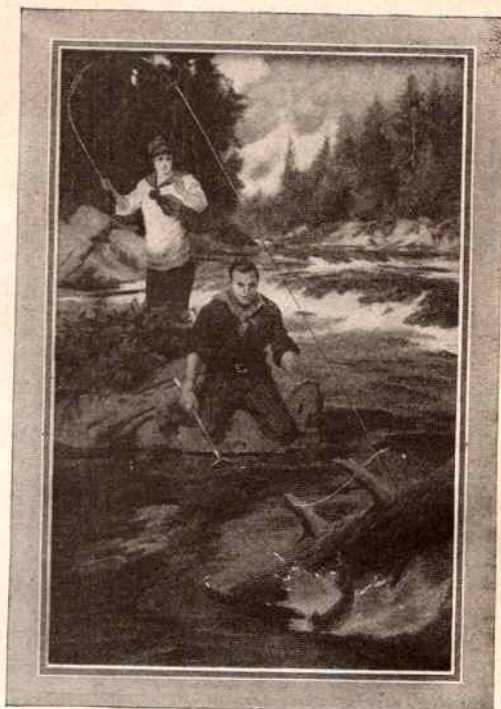
Your cow, steer and horse hides when converted into fur coats, robes and rugs, are far better and cheaper than anything you can buy. There is no humbug about such goods. You know what they are when you furnish the material from which they are made. The Crosby Frisian Fur Company, of Rochester, N. Y., who are pioneers in this kind of work—are doing a large and ever increasing business in custom tanning, due to the fact that they not only understand their business, but treat their patrons right. If interested, get their illustrated catalogue.

HORTON CALENDAR

The Horton Manufacturing Company of Bristol, Connecticut, manufacturers of the famous Bristol steel fishing rods, have recently issued an unusually attractive calendar, which will be sent to any reader of the Outer's Book upon receipt of 15 cents to cover cost of mailing.

The calendar called "The Tragedy", 18 by 28 inches in size, is reproduced in full colors from an attractive fishing subject painted by

Oliver Kemp, one of the greatest artists making a specialty of outdoor subjects. After hooking a fish and pulling it almost to the net, the girl loses control just long enough for the wiley



trout to snag the line and shake himself free, to the discomfort of the young lady and the absolute disgust of the guide. It would make a splendid addition to any sportsman's den.

A VOLUNTARY EXPRESSION

A. A. CUTTER Co., Eau Claire, Wis.

Some months ago I purchased from Mrs. W. A. Edwards, Edwardsburg, Idaho, a pair of shoes ordered for a Mr. Geo. Philbrich, who very kindly permitted me to have the shoes as I badly needed some and he ordered another pair. I write to state that the shoes have a record of 840 miles of hard usage over rocks, underbrush, wet snow, etc., and are in extraordinary condition yet. The soles were not nailed, as is the custom in the country and are not worn through; from appearances will still stand an equal amount of usage. One heel is somewhat worn from a natural tendency of the wearer to over run. No dressing was adminis-



Telephone Etiquette

Co-operation is the keynote of telephone success.

For good service there must be perfect co-operation between the party calling, the party called, and the trained operator who connects these two.

Suggestions for the use of the telephone may be found in the directory and are worthy of study, but the principles of telephone etiquette are found in everyday life.

One who is courteous face to face should also be courteous

when he bridges distance by means of the telephone wire.

He will not knock at the telephone door and run away, but will hold himself in readiness to speak as soon as the door is opened.

The 100,000 employees of the Bell system and the 25,000,000 telephone users constitute the great telephone democracy.

The success of the telephone democracy depends upon the ability and willingness of each individual to do his part.

**AMERICAN TELEPHONE AND TELEGRAPH COMPANY
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One Policy

One System

Universal Service

tered until after the 840 miles of wear and were worn after the dressing upon the streets of Denver and Pueblo. Never wore Cutter shoes before. Will never wear any other high topped shoe if I can get Cutter again. Would you care to have Photos of these shoes? I am a mining engineer and have much use for high topped shoes and feel very proud of the Cutter shoe, considering the record. Yours respectfully,

VERNE A. ROBINSON,

No. 1 Block J, Pueblo, Colo.

A NEW STEVENS GUN

The J. Stevens Arms & Tool Company is out with their new No. 425 high power repeating rifle. This model, it may be safely said, is the most up-to-date gun in its class now before the public. The No. 425 high power repeating rifle is compact—guaranteed for absolute accuracy and has the advantage of a hammerless rifle because of the solid wall of steel between the eye and the breech bolt when the rifle is locked. At the same time it has the advantage of a hammer so that the operator is always



sure what he is doing. In the larger caliber, that is to say, the .35 caliber, the high power repeating rifle is sufficiently powerful for any game that may be found in North America. Hunters and Sportsmen everywhere will be keenly interested in this latest offering—its unerring accuracy, power and remarkably efficient mechanism will make an instant appeal. Stevens No. 425 high power repeating rifles are now being distributed to the hardware and sporting goods trade and descriptive folder will be forwarded to any applicant upon demand.

LARGE BOAT COMBINE

Notices have been sent out regarding the formation of a large boat combine recently launched, which will operate under the name of the National Boat & Engine Company, with a capitalization of \$10,000,000. A partial list of the companies absorbed is as follows: Racine Boat Mfg. Company, Muskegon, Mich., Truscott Boat Mfg. Co., St. Joseph, Mich., Pope Boat Company, Fond du Lac, Wis., Pierce Motor Boat Co., Racine, Wis., Shell Lake Boat

Company, Shell Lake, Wis., Western Boat & Engine Works, Michigan City, Ind., West Mystic Mfg. Company, West Mystic, Conn., Inland Lake Boat Co., Lake Geneva, Wis. The officers of the new company are Walter J. Reynolds, President, J. M. Truscott, Vice-President, and John Q. Ross, Secretary, and the directors as follows: Walter J. Reynolds, President Racine Boat Mfg. Co., Muskegon, Mich., J. M. Truscott, President Truscott Boat Mfg. Co., St. Joseph, Mich., Henry S. Beardsley, President Beardsley & Co., New York, N.Y., John Q. Ross, Lieutenant-Governor, Michigan, C. R. Carpenter, Cashier, Commercial and Savings Bank, Racine, Wis., J. H. Smith, Cashier, Lumberman's Bank, Shell Lake, Wis., A. M. Probst, Director of National Reserve Bank, New York, N. Y., Dr. Frank R. Warren, Capitalist, Michigan City, Ind., Allen R. Thompson, Secretary and Treasurer, West Mystic Mfg. Co., West Mystic, Conn., P. E. Pope, President, Pope Boat Works, Fond du Lac, Wis.

Walter J. Reynolds, president of the Racine Boat Manufacturing Company of Muskegon, Mich., who is the president of the new combination is enthusiastic over its prospects, and in an

article concerning the new organization he says, among other things, that the marine gas engine has rapidly driven the steam engine out of pleasure craft. Steam boilers were opposed to economy of space. With gas engines all the space for utility and comfort of a larger vessel propelled by steam may now be applied to much smaller craft. "The perfection of the gas engine," says the president, "has created types of boats which were impossible before gas engines were known. These are all classes of launches and speed boats of every description. This revolution in the pleasure boat industry is bringing about a rapidly increasing demand for pleasure craft of all sorts; it is to meet this demand in an adequate way that the National Boat and Engine Company has united their interests."

A CORRECTION

We desire to call attention to a typographical error in the advertising of the Schoverling, Daly & Gales Co., which appeared in the January issue of this magazine. Instead of Charles Day the ad should have read Charles Daly three barrel guns.

WINCHESTER



.22 CALIBER

Rim Fire Cartridges

Why keep your scores down and lessen the pleasure of indoor target shooting by using variable ammunition? Why not shoot Winchester cartridges, the bullseye-making kind? They cost only a few cents more a hundred than the cheapest makes, yet they are dollars better. Winchester .22's, loaded with Smokeless or Black powder, are wonderfully accurate and uniform, as a trial will show. The best shots use them and the best dealers everywhere sell them.

Ask for the Red **W** Brand



SHIP YOUR
FURS
HIDES and PELTS

To **McMILLAN FUR & WOOL CO.**
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Illustrated Circular Free to anyone interested in
RAW FURS.
Trappers' Guide Free to those who ship to us



Fish Bite

like hungry wolves and keep you busy if you go after them with my wonderful fish-luring bait

MAGIC-FISH-LURE

Best fish bait ever invented. You catch a big string of fish while the other fellows are waiting for a bite. Price 25¢ a box. Positively guaranteed. Write for Free Booklet and my special offer of one box to help introduce it.

J. F. GREGORY, Dept. D, St. Louis, Mo.

"Outdoor" Foot Comfort

For Hunters, Trappers, Campers, "Hikers," Fishermen, Canoeists, Etc.

This is a genuine "Russell" "Maple Pac" high top (10-inch) Moccasin—extra thick, but fully flexible, dry-tan Caribou—extremely durable—adapted to thorough waterproofing—light weight, and conforms exactly to shape of foot—made with solid, snow-proof, bellows tongue and heavy nickle eyelets, and laced with best quality rawhide. Extra (flexible) sole, 25¢ extra, where desired. The "best-on-earth" Moccasin for sportsmen's and all "outdoor" wear. Order today, stating size regular shoe worn; fit and satisfaction Guaranteed or money refunded. Ask for Catalogue full line Moccasin Footwear.



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Just like a 30-Footer
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Do not think of Buying a Launch or Engine until you see our Handsome Book.



WHICH EXPLAINS FOUR
WONDERFUL
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Only \$121 for this complete 16-ft. Launch—3 H. P., guaranteed self-starting Engine, weedless Wheel and Rudder. Result of 30 years' experience. Money back if not as represented. Write for free catalog today. Special Bargains in Weeco reversible, self-starting engines to those building or buying their own hulls. Engine controlled by one lever. Full size Boat Designs furnished free to purchasers of Weeco Engines.



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Write for Catalogue

Are adapted for "BIG" game as well as target shooting.

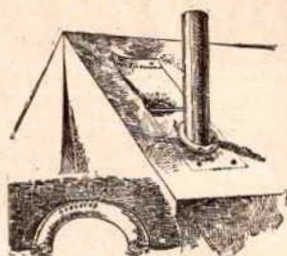
We make a specialty on Sporting Rifles.

THE MALCOLM RIFLE TELESCOPE MFG. CO.
Auburn, New York

A COMFORTABLE TENT WITHOUT DANGER OF FIRE

On raw, damp or cold days when a hot fire is necessary in the camp stove, the tent wall or roof is very liable to catch fire from the hot stove pipe.

A tin stove pipe collar will cut or rust the canvas and cause a scratching noise in windy weather.



The J-M Asbestos Stove Pipe Shield

fits tightly around the pipe forming a secure support for the pipe and absolute protection to the canvas from heat or rust.

No rain can enter the tent and no warm air can escape.

Adopted by Quartermasters' Department, U. S. Army.

Made any desired size and may be furnished alone or sewed to the rectangular piece of canvas and provided with a flap ready for insertion.

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—two to a wagonload!

This isn't from a "fish" story but from a fact story, told by a man who knows what he's TALKING about—so beautifully written and pictured that you are no true sportsman if it does not make your "mouth water" to be in the wonderful game country it refers to. The

GULF COAST COUNTRY OF TEXAS

offers you now the kind of fishing and hunting that makes the longest trip worth while. Wild fowl are so plentiful that it is a poor marksman indeed who cannot bag the "limit" in a single day, when the season is on. And there are deer—MANY of them, and even bear. There are wild turkeys, plover, jacksnipe and the dangerous wild hog. And fish!—the mighty tarpon, mackerel by the millions, and the best of sea bass fishing anywhere. If you are interested in a REAL game country, you will be interested in our superbly printed book that tells you all about it—a heart to heart talk to all sportsmen, illustrated with 50 photographs, that will hold your interest from first page to last. Please write today for free copy.

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Hides and Fur-Skins Dressed and Dyed

This Free Book
Tells You About My
Better Proposition



FOR twenty-five years I have specialized on work of the very highest quality in tanning and dressing Hides and Fur Skins. If you have a skin of any kind that you want made up into a

Fur Coat, Robe or Rug

write for a copy of my handsome new booklet and price list. It shows you how my work stacks up, and gives you some plain facts on the tanning proposition that you ought to know. Simply drop me a postal, I'll send the book free of charge, postpaid.

Frank Martin

954 Prospect St.
Milwaukee, Wis.



New
Model
27

Marlin

Repeating
Rifle

The only gun that fills the demand for a trombone ("pump") action repeater in .25-20 and .32-20 calibers.



Shoots high velocity smokeless cartridges, also black and low pressure smokeless. Powerful enough for deer, safe to use in settled districts, excellent for target work, for foxes, geese, woodchucks, etc.

Its exclusive features: the quick, smooth working "pump" action; the wear-resisting *Special Smokeless Steel* barrel; the modern *solid-top* and *side ejector* for rapid, accurate firing, increased safety and convenience. It has *take down* construction and *Ivory Bead* front sight; these cost extra on other rifles of these calibers.

Our 136 page catalog describes the full *Marlin* line. Sent for three stamps postage. Write for it.

The Marlin Firearms Co.

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One Thousand Dollars and the Usual Handsome Trophy GUARANTEED

by the Interstate Association to the winner of the 1911 Grand American Handicap.

REMEMBER

the uniform success that has attended the use of



Smokeless Shotgun Powders

in this classic event year after year.

Start Practicing Now

Always The Same Good Old

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Blatz enjoys the enviable reputation of being the beer of character, quality and uniformity—and every bottle contains the

Reason Why.

It's a pleasant way of getting at the facts.

Remember the Triangular Label.




THE FINEST BEER EVER BREWED

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NOW IS THE TIME TO ORDER YOUR BOAT

If you intend buying a boat during the coming season it would be wise to place your order early, since disappointment is sure to follow if you wait until the eleventh hour. As we operate one of the largest boat factories in the Northwest, we are in a position to save you money on boats of every description.



We have a few stock boats for prompt delivery, which we will sell at a bargain.

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Why kill yourself by smoking a strong pipe? You can get a Scotch Calabash that absorbs all nicotine and poisons and ensures a cool, sweet smoke. Money back if you are not satisfied.

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\$114.00 SET ARMY POLE HARNESS \$21.85
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There can't be "one shell wrong"

when they're loaded with Dead Shot Smokeless. A mountain of powder comes through the mill chemically tested on the way in each stage of manufacture. When finished it must pass the shooting range tests—must show definite points in high velocity, light recoil, low bursting pressure and uniform sound. The powder in one shell must be like that in any other. It is physically impossible for it to be otherwise.

Dead Shot Smokeless

Its stability is guaranteed.

The crisp air, the snow, the baying of the hounds and the consciousness that you have a good gun and a quick, sure powder; these are the things that make hunting of the rabbit and fox the sport of kings.

Dead Shot with its own special feature of high-velocity-with-light-recoil establishes the fact that it is a decided advantage for accuracy.

All the loading companies use it.

If your dealer hasn't it, we will refer you to one who has.

AMERICAN POWDER MILLS

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NEW 64-PAGE CATALOG
IS NOW READY. Contains
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SPINNERS. SEND FOR CATALOG "C" AND GET NEXT

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FOR SPORTING SPRINGFIELDS

Fine Hand-made Shotguns, Double Rifles, Three and Four Barrel Guns and telescope sight mounting. Now engaged on a Sporting Springfield de luxe for Lieut. Townsend Whelen.

FRED ADOLPH,

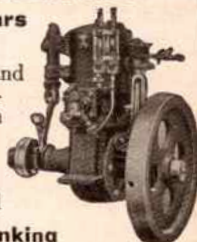
10 Ariel Park, Rochester, N. Y.

Write Fred Adolph, gun-maker. Twenty years' experience in the leading factories of Europe. Specialties

T. & M. MARINE ENGINES

**Pacemakers for 16 years
and still in the lead**

The great speed, power and dependability of T. & M. engines have won the admiration of boat experts the world over. Yet, they cost no more than many inferior makes. All are of the easiest reversing type and



Start without Cranking

All sizes—2 to 120 H. P.—light, medium and heavy duty. Write today for handsome new catalog and name of nearest dealer.

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Mayer

HUNTING BOOTS

The sportsman's quality boots. Built for service. Carefully made, comfortable and lasting. The leather is specially treated (viscolized) to keep out the water. They protect the feet and keep them dry.

Can be secured through shoe dealers everywhere. If not obtainable, write to us.



Look For This Trade Mark on the Sole.

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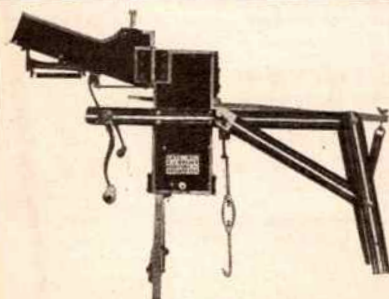


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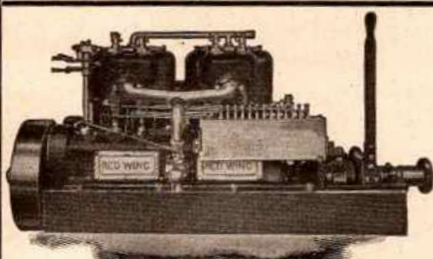
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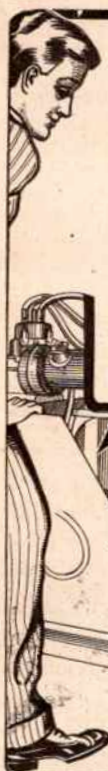
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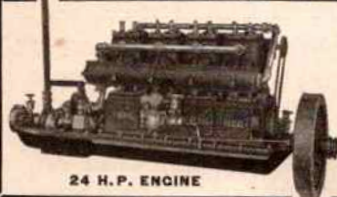
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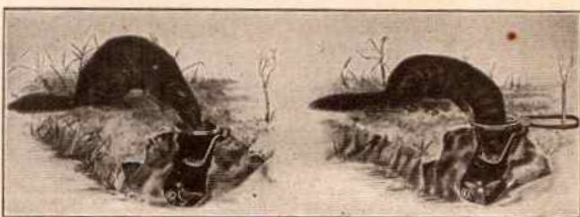
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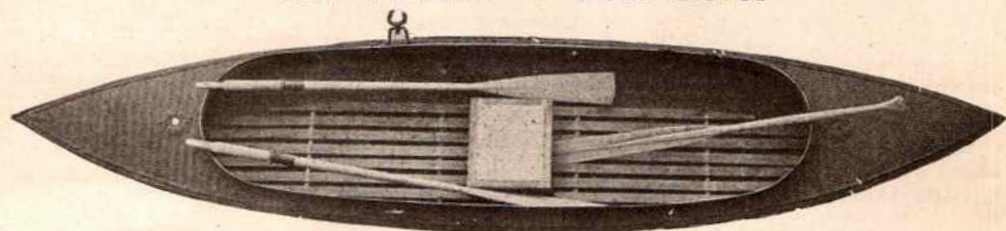
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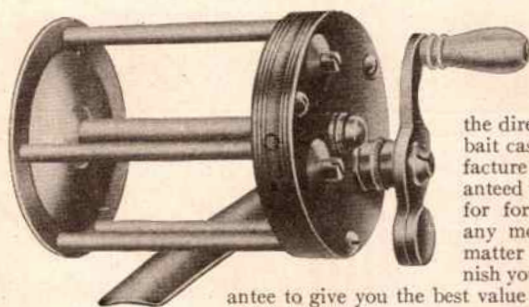
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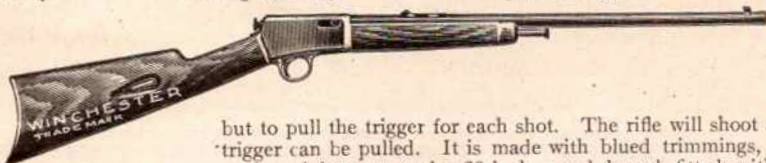
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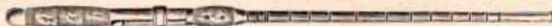


but to pull the trigger for each shot. The rifle will shoot as fast as the trigger can be pulled. It is made with blued trimmings, plain walnut stock and forearm and a 20-inch round barrel, fitted with open front and rear sights. Sportsmen will find this automatic most convenient for snap shooting and small game. In addition to Winchester guns, we can furnish you with those of any other manufacture.

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band, which holds the reel securely in position, being instantly locked or released by a slight movement of the hand. As will be noted, it is made of two piece construction with tip joints 35 inches long. You may prefer a steel rod, or one manufactured by another company. If so, kindly advise us and we will gladly let you know how many subscriptions will be required.



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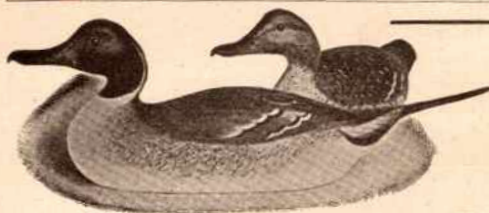
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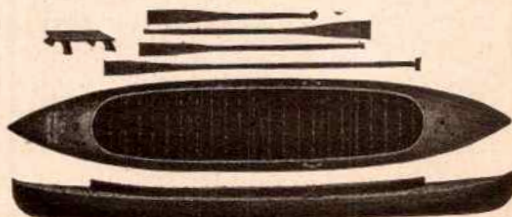
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